

## REFERENCES:

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- [1] M. S. Mahmoud and M. G. Singh, "Large scale systems modelling", *Pergamon press*, Oxford, England, pp. 156-166, 1981.
- [2] N. K. Sinha and B. Kuszta, (Eds.), "Modelling and identification", *Van norstrand reinhold*, New York, pp. 133-163, 1983.
- [3] M. Jamshidi, "Large scale systems, modelling and control", *Elsevier, North-Holland*, New York, 1983.
- [4] M. Jamshidhi and M. Malek- Zavarei, "Linear control systems, A computer-aided approach", *International series on systems and control, Pergamon press, Oxford, England*, pp. 161- 200, 1986.
- [5] N. K. Sinha and Rao. G. P (Eds.), "Identification of continuous time systems: Methodology and Computer implementation", *Kluwer Academic Publishers*, The Netherlands, 1991.
- [6] L. Fortuna, G. Nunnari and A. Gallo, "Model order reduction techniques with applications in Electrical Engineering", *Springer- Verlag*, London, 1992.
- [7] Goro Obinata and B. D. O. Anderson, "Model reduction for control system design". *Springer- Verlag*, London, 2001.
- [8] A. C. Antoulas, "Approximation of large scale dynamical systems", *SIAM publications*, Philadelphia, PA, USA, 2005.
- [9] W. H. A. Schilders., H. A. Vander Vorst and Joost Rommes, "Model order reduction. Theory, research aspects and applications", *Springer Verlag*, Berlin, Hiedelberg, 2008.
- [10] E. J. Davison, "A method for simplifying linear dynamic systems", *IEEE Transactions on Automatic Control*, vol. 11, pp. 93-101, 1966.
- [11] M. R. Chidambara and E. J. Davison, On "A method for simplifying linear dynamic systems", *IEEE Transactions on Automatic Control*, vol. 12, pp. 119-121, 1967.
- [12] M. R. Chidambara and E. J. Davison, "Further remarks on simplifying linear dynamic systems", *IEEE Transactions on Automatic Control*, vol. 12, pp. 213-214, 1967.

- [13] M. R. Chidambara and E. J. Davison, "Further remarks on 'A simplifying linear dynamic systems' ", *IEEE Transactions on Automatic Control*, vol. 12, pp. 799-800, 1967.
- [14] E. J. Davison, "A new method for simplifying linear dynamic systems", *IEEE Transactions on Automatic Control*, vol. 13, pp. 214-215, 1967.
- [15] S. A. Marshall, "An approximate method for reducing the order of a linear system", *Control*, vol. 10, pp. 642-643, 1966.
- [16] M. Aoki, "Control of large scale dynamic systems by Aggregation", *IEEE Transactions on Automatic Control*, vol. 13, pp. 246-253, 1968.
- [17] C. F. Chen and L. S. Shieh, "A novel approach to linear model simplification", *International Journal of Control*, vol. 8, no. 6, pp. 561-570, 1968.
- [18] A. Gruca and P. Bertrand, "Approximation of high order system by low order models with delays", *International Journal of Control*, vol. 28, no. 6, pp. 953-965, 1978.
- [19] H. Inooka and G. Obinata, "Mixed method of aggregation and ISE approach for system reduction", *Electronics letters*, vol. 13, no.3, pp. 88-90, 1977.
- [20] M. Gopal and S. I. Mehta, "On the selection of the eigenvalues to be retained in the reduced order models", *IEEE Transactions on Automatic Control*, vol. 27, pp. 688-690, 1982.
- [21] D. Mitra, "The reduction of complexity of linear, time invariant dynamical systems", *Proceedings 4<sup>th</sup> IFAC Congress*, Warsaw, pp. 19-33, 1969.
- [22] C. D. Villemagne and R. E. Skeleton, "Model reduction using a projection formula", *International Journal of Control*, vol. 46, pp. 2141-2169, 1987.
- [23] E. J. Grimme, "Krylov projection methods for model reduction", *Ph.D. Thesis*, Department o Electrical Engineering, University of Illinois at Urbana Champaign, 1997.
- [24] Z. Bai, "Krylov subspace techniques for reduced order modelling of large scale dynamical systems", *Applied Numerical Mathematics*, vol. 43, pp. 9-44, 2002.
- [25] R. W. Freund, "Model reduction methods based on Krylov subspaces", *Acta Numerica*, vol. 12, pp. 267-319, 2003.

- [26] D. Chaniotis and M. A. Pai, "Model reduction in power systems using Krylov subspace methods", *IEEE Transactions on Power Systems*, vol. 20, no. 2, pp. 888-894, 2005.
- [27] Y. Lin, L. Bao and Y. Wei, "A model order reduction method based on Krylov subspaces for MIMO bilinear dynamical systems", *Journal of Applied Mathematics and Computing*, vol. 25, no.1-2, pp. 293-304, 2007.
- [28] J. Dongarra and F. Sullivan, "Introduction to top 10 algorithms", *IEEE Computing in Science & Engineering*, vol. 2, no. 1, pp.22-23, 2000.
- [29] H. A. Van der Vorst, "Krylov subspace iteration", *IEEE Computing in Science & Engineering*, vol. 2, no. 1, pp.32-37, 2000.
- [30] C. Lanczos, "An iteration method for the solution of the eigenvalue problem of linear differential and integral operators", *Journal of Research of the National Bureau of Standards*, vol. 45, no. 4, pp. 255-282, 1950.
- [31] W. E. Arnoldi, "The principle of minimized iterations in the solution of the matrix eigenvalues problem", *Quarterly of Applied Mathematics*, vol. 9, pp.17-29, 1951.
- [32] J. Cullum and T. Zhang, "Two sided Arnoldi and non-symmetric Lanczos algorithm", *SIAM Journal of Matrix Analysis and Applications*, vol. 24, no. 2, pp.303-319, 2002.
- [33] B. Salimbahrami, B. Lohmann, T. Bechtold and J. Korvink, "A two-sided Arnoldi algorithm with stopping criterion and an application in order reduction of MEMS", *Mathematical and Computer Modelling of Dynamical Systems*, vol. 11, no.1, pp. 79-93, 2005.
- [34] B. C. Moore, "Principal component analysis in linear systems: controllability, observability and model reduction", *IEEE Transactions on Automatic Control*, vol. 26, pp. 17-32, 1981.
- [35] S. Kung and W. D. Lin, "Optimal Hankel norm model reductions: multivariable systems", *IEEE Transactions on Automatic Control*, vol. 26, pp. 832-852, 1981.

- [36] K. Glover, "All optimal Hankel norm approximation of linear multivariable systems and their  $L_\infty$  error bounds", *International Journal of Control*, vol. 39, pp. 1115-1193, 1984.
- [37] L. Pernebo and L. M. Silverman, "Model reduction via balanced state space representations", *IEEE Transactions on Automatic Control*, vol. 27, no.2, pp. 382-387, 1982.
- [38] K. V. Fernando and H. Nicholson, "Singular perturbation model reduction of balanced systems", *IEEE Transactions on Automatic Control*, vol. 27, no.2, pp. 466-468, 1982.
- [39] K. V. Fernando and H. Nicholson, "Singular perturbation approximations for discrete time balanced systems", *IEEE Transactions on Automatic Control*, vol. 28, no.2, pp. 240-242, 1983.
- [40] P. V. Kokotovic, R.E. O. Malley and P. Sannuti, "Singular perturbations and order reduction in control theory- an overview", *Automatica*, vol.12, pp.123-132, 1976.
- [41] Y. Liu and B. D. O. Anderson, Singular perturbation approximation of balanced systems, *International Journal of Control*, vol. 50, no. 4, pp. 1339-1405, 1989.
- [42] V. M. Adamjan, D. Arov and M. G. Krein, "Analytic properties of Schmidt pairs for a Hankel operator and the generalized Schur- Takagi problem", *Mathematics of the USSR- Sbornik*, vol.15, no.1,pp.31-73, 1971.
- [43] S. Y. Kung, K. S. Arun and D. V. Bhaskar Rao, "A new identification and model reduction algorithm via singular value decompositions", *In proceedings 12<sup>th</sup> Asilomar Conference on Circuits, Systems and Computers*, Pacific Grove, CA, pp.705-714, 1978.
- [44] D. F. Enns, "Model reduction with balanced realization: An error- bound and a frequency weighted generalization", *In proceedings 23<sup>rd</sup> IEEE Conference Decision and Control*, Las Vegas, NV, pp.127-132, 1984.
- [45] C. A. Lin and T. Y. Chiu, "Model reduction via frequency weighted balanced realization", *Control Theory and Advanced Technology*, vol.8, pp. 341-451, 1992.

- [46] V. Sreeram, B. D. O. Anderson and A. G. Madievski, “New results on frequency weighted balanced reduction technique”, *In proceedings American Control Conference*, Washington, pp.4004-4009, 1995.
- [47] A. Verga and B. D. O. Anderson, “Accuracy- enhancing methods for balancing related frequency weighted model and controller reduction”, *Automatica*, vol.39, pp. 919-927, 2003.
- [48] T. Van Gestal, B. De Moor, B. D. O Anderson and P. Van Overschee, “On frequency weighted balanced truncation: Hankel singular values and error bounds”, *European Journal of Control*, vol. 7, pp. 584-592, 2001.
- [49] A. Ghafoor and V. Sreeram, “Partial fraction expansion based frequency weighted model reduction technique with error bounds”, *IEEE Transactions on Automatic Control*, vol. 52, pp. 1942-1948, 2007.
- [50] A. Ghafoor, “Frequency weighted model reduction and error bounds”, *Ph.D. Thesis*, School of Electrical, Electronics and Computer Engineering, University of Western Australia, 2007.
- [51] S. K. Singh, “Balanced realization based reduction algorithms and their applications”, *Ph.D. Thesis*, Department of Electrical Engineering, Institute of technology, Banaras Hindu University, 2002.
- [52] S. K. Nagar and S. K. Singh, “An algorithm approach for system decomposition and balanced realized model reduction”, *Journal of Franklin Institute*, vol.341, pp. 615-630, 2004.
- [53] Deepak Kumar, J. P. Tiwari and S. K. Nagar, “Model order reduction of SISO systems by modified Hankel norm approximation technique”, *National Systems Conference (NSC-2011)*, IIT Bhubaneswar, pp. 73-79, 2011.
- [54] Deepak Kumar, J. P. Tiwari and S. K. Nagar, “Reducing order of large scale systems by extended balanced singular perturbation approximation”, *International Journal of Automation and Control*, vol.6, no.1, pp. 21-38, 2012.
- [55] Deepak Kumar, “Frequency weighted balanced realization based model reduction algorithms”, *Ph.D. Thesis*, Department of Electrical Engineering, Institute of technology, Banaras Hindu University, 2012.

- [56] Deepak Kumar and S. K. Nagar, "Reducing power system models by Hankel norm approximation technique", *International Journal of Modelling and Simulation*, vol. 33, no. 3, pp. 139-143, 2013.
- [57] Deepak Kumar and S. K. Nagar, "Model reduction by extended minimal degree optimal Hankel norm approximation", *Applied Mathematical Modelling*, vol. 38, pp. 2922- 2933, 2014.
- [58] H. S. Wall, "Analytical theory of continued fractions", *Van Norstrand*, New York, 1948.
- [59] G. A. Baker, "Essentials of Pade approximation", *Academic press*, New York, 1975.
- [60] L.G. Gibilaro and F. P. Lees, "The reduction of complex transfer function models using the method of moments", *Chemical Engineering Science*, vol.24, no.1, pp. 85-93, 1969.
- [61] C. F. Chen and L. S. Shieh, "Continued fraction inversion by Routh's algorithm", *IEEE Transactions on Circuit Theory*, vol. 16, no. 2, pp.197-202, 1969.
- [62] C. F. Chen and L. S. Shieh, "A novel approach to linear model simplifications", *International Journal of Control*, vol. 5, pp.717-739, 1970.
- [63] S. C. Chuang, "Application of continued-fraction method for modelling transfer functions to give more accurate initial transient response", *Electronics Letters*, vol. 6, pp. 861-863, 1970.
- [64] L. R. Shenton and K. O. Bowman, "Continued fractions for the PSI function and its derivatives", *SIAM Journal of Applied Mathematics*, vol.20, no.4, pp.547-554, 1971.
- [65] M. R. Calfe and M. Healey, "Continued-fraction model reduction techniques for multivariable systems", *IEE Proceedings Control Theory and Applications*, vol.121, pp.393-395, 1974.
- [66] L. S. Shieh and M. J. Goldman, "Continued fraction expansion and inversion of the Cauer third form", *IEEE Transactions on Circuits and Systems*, vol. 21, pp. 341-345, 1974.

- [67] C. F. Chen, "Model reduction of multivariable control systems by means of matrix continued fractions", *International journal of Control*, vol.20, no.2, pp. 225-238, 1974.
- [68] Y. Shamash, "Continued fraction methods for the reduction of discrete-time dynamic systems", *International journal of Control*, vol.20, no.2, pp. 267-275, 1974.
- [69] A. M. Davidson and T. N. Lucas, "Linear system reduction by continued fraction expansion about a general point", *Electronics Letters*, vol. 10, pp. 271-273, 1974.
- [70] C. P. Chen and Y. T. Tsay, "A squared magnitude continued fraction expansions for stable reduced models", *International Journal of Systems Science*, vol.7, no.6, pp.625-634, 1976.
- [71] S. S. Lamba and S. Vittal Rao, "Aggregation matrix for the reduced-order continued fraction expansion model of Chen and Shieh", *IEEE Transactions on Automatic Control*, vol. 23, no.1, pp. 81-83, 1978.
- [72] R. Parthasarathy and S. John, "System reduction using Cauer continued fraction expansion about  $s = 0$  and  $s = \infty$  alternately", *Electronics Letters*, vol. 14, no.8, pp. 261-262, 1978.
- [73] R. A. Sack, "A numerical method for simultaneous convergence to the elements of a sequence", *Journal of Computational and Applied Mathematics*, vol.5, no.1, pp.29-35, 1979.
- [74] K. Khatwani and R. Tiwari and J. Bajwa, "On Chuang's continued fraction method of model reduction", *IEEE Transactions on Automatic Control*, vol. 25, no.4, pp. 822-824, 1980.
- [75] W.B. Jones, W. J. Thron and H. Waadeland (Eds.), "Analytical theory of continued fractions", *Proceedings of a Seminar- Workshop, Lecture Notes in Mathematics*, Leon, Norway, 1981.
- [76] R. Parthasarathy and S. John, "Cauer continued fraction methods for model reduction", *Electronics Letters*, vol. 17, no.21, pp. 792-793, 1981.
- [77] C. Hwang, "On Cauer third continued fraction expansion method for the simplification of large system dynamics", *International Journal of Control*, vol. 37, no.3, pp. 599-614, 1983.

- [78] T. N. Lucas, "linear system reduction by continued fraction expansion about  $s = 0$  and  $s = \infty$  alternately", *Electronics Letters*, vol. 19, no. 7, pp. 244-246, 1983.
- [79] Y. Katsube, K. Horiguchi and N. Hamada, "System reduction by continued fraction expansion about  $s = j\omega_i$ ", *Electronics Letters*, vol. 21, no. 16, pp. 678-680, 1985.
- [80] C. F. Yung, "Generalized two-point continued fractions and their applications in control systems", *Ph.D. Thesis*, Department of Electrical Engineering, National Cheng Kung University, Taiwan, 1985.
- [81] C. Hwang and C. F. Yung, "On system reduction by Cauer continued fraction about  $s = 0$  and  $s = \infty$  alternately", *International Journal of Systems Science*, vol.17, no.11, pp.1567-1587, 1986.
- [82] C. F. Yung and C. Hwang, "Time domain simplification of linear time-invariant systems using Cauer continued fraction expansion about  $s = 0$  and  $s = \infty$  alternately", *Journal of Franklin Institute*, vol. 321, no.3, pp. 139-146, 1986.
- [83] C. Hwang and M. Y. Chen, "A multipoint continued fraction expansion for linear system reduction", *IEEE Transactions on Automatic Control*, vol. 31, no.7, pp. 648-651, 1986.
- [84] G. E. Antoniou and C. N. Manikopoulos, "Two dimensional modified Cauer form: Circuit and state space realisation", *Electronics Letters*, vol.26, no.4, pp. 258-259, 1990.
- [85] Y. P. Shih and C. S. Shieh, "Model reduction of continuous and discrete multivariable systems by moments matching", *Computers & Chemical Engineering*, vol.2, no.4, pp. 127-132, 1978.
- [86] A. M. Davidson and I. R. Walters, "Linear system reduction using approximate moment matching", *IEE Proceedings*, vol.135, no.2, pp.73-78, 1988.
- [87] A. Bultheel and M. Van Barel, "Pade techniques for model reduction in linear system theory- A Survey", *Journal of Computational and Applied Mathematics*, vol. 14, pp. 401-438, 1986.



- [88] R. K. Dhawan, A. Sahai, D. V. Nishar and G. P. Rao, "Recursive estimation of Markov parameters in linear continuous-time SISO systems via block pulse functions", *In proceedings 9<sup>th</sup> IFAC/ IFORS symposium on Identification and systems parameter estimation*, Hungary, 1991.
- [89] A. V. B. Subrahmanyam, Dines Chandra Saha and G. P. Rao, "Continuous time systems identification via Markov parameter estimation for model order reduction and model quality assessment", *European Control Conference*, vol. 56, pp. 2303-2307, 1993.
- [90] H. Pade, "Sur La representation approachee d'une fonction par des fonction rationnelles", *Ph. D. Thesis*, Annales Scientifiques de l'Ecole Normale Supérieure Ser. 3 (Supplement), vol. 9, pp. 1-93, 1892.
- [91] Y. Shamash, "Order reduction of linear systems by Pade approximation methods", *Ph.D. Thesis*, Imperial College of Science and Technology, University of London, England, 1973.
- [92] Y. Shamash, "Stable reduction-order models using Pade-type approximation", *IEEE Transactions on Automatic Control*, vol. 19, pp. 615, 1974.
- [93] F. J. Alexandro, Jr., "Stable partial Pade approximations for reduced order transfer function", *IEEE Transactions on Automatic Control*, vol. 29, pp. 159-162, 1984.
- [94] H. U. Xiheng, "FF- Pade method of model reduction in frequency domain", *IEEE Transactions on Automatic Control*, vol. 32, no.3, pp. 243-246, 1987.
- [95] Y. Bistritz, "Mixed complete Pade model reduction: A useful formulation for closed loop design", *Electronics Letters*, vol.16, no.14, pp. 563-565, 1980.
- [96] J. Pal and L. M. Ray, "Improvements of Pade approximation technique in model order reduction", *IFAC symposium on theory and application of digital control*, New Delhi, India, vol.2, 1982.
- [97] Y. Bistritz and U. Shaked, "Minimal Pade model reduction for multivariable systems", *ASME Journal of Dynamic Systems, Measurements and Control*, vol. 106, pp. 293-299, 1984.
- [98] D. P. Papadopoulos and A. K. Boglou, "Reduced order modelling of linear MIMO systems with Pade approximation method", *International Journal of Systems Science*, vol. 21, no. 4. pp. 693-710, 1990.

- [99] W. D. Fryer, "Applications of Routh's algorithm to network theory problems", *IRE Transactions on Circuit Theory*, pp. 144-149, 1969.
- [100] M. F. Hutton and B. Friedland, "Routh approximations for reducing order of linear time invariant systems", *IEEE Transactions on Automatic Control*, vol. 20, no.3, pp. 329-337, 1975.
- [101] V. Krishnamurthy and V. Sheshadri, "A simple and direct method of reducing order of linear systems using Routh approximations in the frequency domain", *IEEE Transactions on Automatic Control*, vol. 21, no.5, pp. 797-799, 1976.
- [102] V. Krishnamurthy and V. Sheshadri, "Model reduction using Routh stability criterion", *IEEE Transactions on Automatic Control*, vol. 21, no.5, pp. 797-799, 1976.
- [103] A. S. Rao, S. S. Lamba and S. V. Rao, "Comments on "Model reduction using Routh stability criterion"", *IEEE Transactions on Automatic Control*, vol. 24, no.3, pp. 518, 1979.
- [104] V. Krishnamurthy and V. Sheshadri, "Authors' reply to Comments on "Model reduction using Routh stability criterion"", *IEEE Transactions on Automatic Control*, vol. 24, no.3, pp. 518, 1979.
- [105] R. K. Appaih, "Linear model reduction using Hurwitz polynomial approximation", *International Journal of Control*, vol. 17, pp. 1129-1135, 1973.
- [106] M. Arumugam and M. Ramamoorthy, "A method of simplifying large dynamical systems", *International Journal of Control*, vol. 28, pp. 477-488, 1973.
- [107] A. M. Davision and T. N. Lucas, "Linear system reduction using Schwarz canonical form", *Electronics Letters*, vol.12, pp. 324, 1976.
- [108] A. M. Davision and T. N. Lucas, "Frequency domain reduction of linear systems using Schwarz canonical form", *International Journal of Control*, vol. 37, pp. 1167-1178, 1983.
- [109] C. P. Therapos, "Modification of Schwarz approximation", *Electronics Letters*, vol.20, no.21, pp. 866-868, 1976.

- [110] Y. Shamash, "Linear system reduction using Pade approximation to allow retention of dominant modes", *International Journal of Control*, vol. 28, pp. 477-488, 1978.
- [111] T. C. Chen C. Y. Chang and K. W. Han, "Reduction of transfer functions by the stability equation method", *Journal of Franklin Institute*, vol. 308, pp. 389-404, 1979.
- [112] T. N. Lucas, "A tabular approach to the stability equation method", *Journal of Franklin Institute*, vol. 329, no.1, pp. 389-404, 1992.
- [113] Y. Shamash, "Truncation method of reduction: a viable alternative", *IEEE Transactions on Automatic Control*, vol. 17, no.2, pp. 97-99, 1981.
- [114] Bai- Wu Wan, "Linear model reduction using Mihailov criterion and Pade approximation technique", *International Journal of Control*, vol. 33, pp. 1073-1089, 1981.
- [115] P. O. Gutman, C. F. Mannerfelt and P. Molander, "Contributions to the model reduction problem", *IEEE Transactions on Automatic Control*, vol. 27, no.2, pp. 454-455, 1982.
- [116] T. N. Lucas, "Some further observations on the differentiation method of model reduction", *IEEE Transactions on Automatic Control*, vol. 37, no.9, pp. 1389-1391, 1992.
- [117] T. N. Lucas, "Factor division: a useful algorithm in model reduction", *IEE Proceedings*, vol.130, no.6, pp.362-364, 1983.
- [118] T. N. Lucas, "Biased model reduction by factor division method", *Electronics Letters*, vol.20, no.14, pp. 582-583, 1984.
- [119] C. Hwang, J. H. Hwang and T. Y. Guo, "Multifrequency Routh approximants for linear systems", *IEE Proceedings Control Theory and Applications*, vol.142, no.4, pp.351-358, 1995.
- [120] J. Pal, "Reduced order models for control studies", *Ph.D. Thesis*, Department of Electrical Engineering, University of Roorkee, Roorkee, 1980.
- [121] R. Prasad, "Analysis and design of control systems using reduced order models", *Ph.D. Thesis*, Department of Electrical Engineering, University of Roorkee, Roorkee, 1989.

- [122] Y. Shamash, "Multi variable system reduction via model methods and Pade approximation", *IEEE Transactions on Automatic Control*, vol. 20, pp. 815-817, 1975.
- [123] Y. Shamash, "Model reduction using Routh stability criterion and the Pade approximation technique", *International Journal of Control*, vol. 21, no. 3, pp. 475-484, 1975.
- [124] J. Pal, "Stable reduced order Pade approximants using the Routh Hurwitz array", *Electronics Letters*, vol.15, no.8, pp. 225-226, 1979.
- [125] R. Parthasarathy and K. N. Jayasimha, "System reduction using stability equation method and modified Cauey continued fraction", *Proceedings of the IEEE*, vol. 70, no. 10, pp. 1234-1236, 1982.
- [126] C. Hwang, "Mixed method of Routh and ISE criterion approaches for reduced order modelling of continuous time systems", *ASME Journal of Dynamic Systems, Measurements and Control*, vol. 106, pp. 353-356, 1984.
- [127] N. N. Puri and D. P. Lan, "Stable model reduction by impulse response error minimization using Michailov criterion and Pade approximation", *ASME Journal of Dynamic Systems, Measurements and Control*, vol. 110, pp. 389-394, 1988.
- [128] R. Prasad, "Pade type model order reduction for multivariable systems using Routh approximation", *Computers and Electrical Engineering*, vol. 26, pp. 445-459, 2000.
- [129] V. Singh, D. Chandra and H. KAR, "Improved Routh Pade approximants: A computer aided approach", *IEEE Transactions on Automatic Control*, vol. 49, no. 2, pp. 292-296, 2004.
- [130] G. Parmer, R. Prasad and S. Mukherjee, "A mixed method for large- scale systems modelling using Eigen spectrum analysis and Cauey second form", *IETE Journal of Research*, vol. 53, no. 2, pp. 93-103, 2007.
- [131] G. Parmer, S. Mukherjee and R. Prasad, "System reduction using factor division method and Eigen Spectrum analysis", *Applied Mathematical Modelling*, vol. 31, no. 11, pp. 2542-2552, 2007.
- [132] G. Parmer, R. Prasad and S. Mukherjee, "Order reduction of linear dynamic systems using stability equation method and GA", *International Journal of*

- Computer, Information and Systems Science and Engineering*, vol. 1, no. 1, pp. 26-32, 2007.
- [133] C. B. Vishwakarma and R. Prasad, "Clustering method for reducing order of linear system using Pade approximation", *IETE Journal of Research*, vol. 54, no. 5, pp. 326-330, 2008.
- [134] S. Panda, S. K. Tomar, R. Prasad and C. Andril, "Model reduction of linear systems by conventional and evolutionary techniques", *International Journal of Computational and Mathematical Sciences*, vol. 3, pp: 28-34, 2009.
- [135] D. Kranthi Kumar, S. K. Nagar and S. K. Bharadwaj, "Model order reduction of SISO and MIMO systems based on genetic algorithm", *International Conference on Automation, Robotics and Control Systems*, Florida, USA, pp. 97-104, 2010.
- [136] D. Kranthi Kumar, S. K. Nagar and J. P. Tiwari, "Reduction of SISO discrete time systems based on GA approach", *National conference on Artificial Intelligence and Agents: theory and Applications*, ITBHU, Varanasi, 2011.
- [137] S. R. Desai and R. Prasad, "A novel order diminution of LTI systems using Big Bang Big Crunch optimization and Routh Approximation", *Applied Mathematical Modelling*, vol. 37, no. 16-17, pp. 8016-8028, 2013.
- [138] S. R. Desai and R. Prasad, "A new approach to order reduction using stability equation and big bang big crunch optimization", *System Science & Control Engineering: An open Access Journal*, vol. 1, no. 1, pp. 20-27, 2013.
- [139] Afzal Sikander and R. Prasad, "Linear time invariant system reduction using a mixed methods approach", *Applied Mathematical Modelling*, vol. 39, no. 16, pp. 4848-4858, 2015.
- [140] Y. Shamash, "Continued fraction methods for the reduction of discrete time dynamic systems", *International journal of Control*, vol. 20, no. 2, pp. 267-275, 1974.
- [141] S. C. Chuang, "Linear transformation for simplification of z- transfer functions by Pade type approximation", *Proceedings of the IFAC*, Manchester, 1974

- [142] S. C. Chuang, "Homographic transformation for the simplification of discrete-time transfer function by Pade approximation", *International journal of Control*, vol. 31, no. 5, pp. 721-728, 1975.
- [143] C. Hwang, Y. P. Shih and R. Y. Hwang, "A combined time and frequency domain method for model reduction of discrete systems", *Journal of Franklin Institute*, vol. 316, no.391, pp. 79-86, 1981.
- [144] R. Parthasarathy and K. N. Jayasimha, "Modelling of linear discrete time systems using modified Cauer continued fraction", *Journal of Franklin Institute*, vol. 316, no.1, pp. 79-86, 1983.
- [145] R. Y. Hwang and Y. P. Shih, "Combined methods for model reduction via discrete Laguerre polynomials", *International journal of Control*, vol. 37, no. 3, pp. 615-622, 1983.
- [146] C. G. Chung, K. W. Han and H. H. Yeh "Simplification and identification of discrete transfer function via step response matching", *Journal of Franklin Institute*, vol. 311, no. 4, pp. 231-241, 1981.
- [147] F. F. Shoji, K. Abe and H. Takeda, "A two step iterative method for discrete time systems reduction", *Journal of Franklin Institute*, vol. 315, no.4, pp. 247-257, 1983.
- [148] C. P. Therapos, "A direct method for model reduction of discrete systems", *Journal of Franklin Institute*, vol. 318, no.4, pp. 243-251, 1984.
- [149] Y. Bistriz, "A discrete stability equation theorem and method of stable model reduction", *Systems & Control Letters*, vol. 1, no. 6, pp. 373-381, 1982.
- [150] Somnath Pan and J. Pal, "Reduced order modelling of discrete-time systems", *Applied Mathematical Modelling*, vol. 19, pp. 133-138, 1995.
- [151] S. Mukherjee, Satakshi and R. C. Mittal, "Discrete system order reduction using multipoint step response matching", *Journal of Computational and Applied Mathematics*, vol. 170, pp. 461-466, 2004.
- [152] R. E. Moore, R. Baker Kearfott and M. J. Cloud, "Introduction to interval analysis", *Philadelphia, SIAM*, 2009.

- [153] L. Jaulin, M. Kieffer, o. Didrit and E. Walter, “Applied interval analysis: with examples in parameter and state estimation, robust control and robotics”, *Springer Verlag*, 2001.
- [154] A. S. Dief, “The interval eigenvalue problem”, *ZAMM- Journal of Applied Mathematics and Mechanics*, vol. 71, no.1, pp. 61-64, 1991.
- [155] Ku- Ping Chiao, “Inclusion monotonic property of Courant - Fischer minimal characterization on interval eigenproblems for symmetric interval matrices”, *Tamsui Oxford Journal of Mathematical Sciences*, vol. 15, pp. 11-12, 1999.
- [156] B. Bandyopadhyay, Osman Ismail and R. Gorez, “Routh- Pade approximation for interval systems”, *IEEE Transactions on Automatic Control*, vol. 39, pp. 2454–2456, 1994.
- [157] B. Bandyopadhyay, AvinashUpadhye and Osman Ismail, “ $\gamma$ - $\delta$  Routh approximations for interval systems”, *IEEE Transactions on Automatic Control*, vol. 42, pp. 1127-1130, 1997.
- [158] O. Ismail, “Robust control and model reduction for linear structured uncertain systems”, *Ph. D. Thesis*, Interdisciplinary Programme in Systems and Control Engineering, IIT Bombay, India, 1997.
- [159] C. Hwang, and S. F. Yang, “Comments on the computation of interval Routh approximants”, *IEEE Transactions on Automatic Control*, vol.44, no. 9, pp. 1782–1787, 1999.
- [160] B. Bandyopadhyay and H. Unbehauen, “Interval system reduction using Kharitonov polynomials”, *European Control Conference*, Karlsruhe, Germany, pp. 3581-3586, 1999.
- [161] G. V. K. R. Sastry, G. Raja Rao and P. Mallikarjuna Rao, “Large scale interval system modelling using Routh approximants”, *Electronics Letters*, vol. 36, no. 8, pp:768-769, 2000.
- [162] Y. Dolgin, and E. Zeheb, “On Routh-Pade model reduction of interval systems”, *IEEE Transactions on Automatic Control*, vol. 48, no. 9, pp. 1610–1612, 2003.
- [163] Y. Dolgin and E. Zeheb, “Model reduction of uncertain systems: approximation by uncertain system”, *Proceedings of the IEEE conference on Decision and Control*, vol. 5, pp. 5259-5264, 2003.

- [164] Y. Dolgin and E. Zeheb, "Model reduction of uncertain FIR discrete-time systems", *IEEE Transactions on Circuits and Systems-II: Express Briefs*, vol. 51, no. 8, pp. 406-411, 2004.
- [165] Shih feng Yang, "Comments on "On Routh-Pade model reduction of interval systems"". *IEEE Transactions on Automatic Control*, vol. 50, no. 2, pp: 273-274, 2005.
- [166] Y. Dolgin, "Author's reply", *IEEE Transactions on Automatic Control*, vol. 50, no. 2, pp. 274-275, 2005.
- [167] P. Shingare, "Fixed and interval model reduction techniques for control systems", *Ph. D. Thesis*, Interdisciplinary Programme in Systems and Control Engineering, IIT Bombay, India, 2007.
- [168] G. Saraswathi, K. A. Gopala Rao and J. Amarnath, "A mixed method for order reduction of interval systems", *International Conferences on Intelligent and Advanced Systems*, pp. 1042-1046, 2007
- [169] N. Selvaganesan, "Mixed method of model reduction for uncertain systems", *Serbian Journal of Electrical Engineering*, vol. 4, no.1, pp: 1-12, 2007.
- [170] B. Bandyopadhyay, V. Sreeram and P. Shingare, "Stable  $\gamma$ - $\delta$  Routh approximations of interval systems using Kharitonov polynomials", *International Journal of Information and Systems Sciences*, vol. 4, no.3, pp. 348-361, 2008.
- [171] G. U. Chuan-qing, and Yang Jain. "Stable Routh- Pade type approximation in model reduction of interval systems", *Journal Shanghai University, Springer*, vol. 14, no.5, pp. 369-373, 2010.
- [172] D. K. Saini, and R. Prasad, "Mixed evolutionary techniques to reduce order of linear interval system using generalized Routh array", *International Journal of Engineering, Science and Technology*, vol. 2, no. 10, pp. 5197- 5205, 2010.
- [173] N. Vijaya Anand, M. Siva Kumar and R. Srinivas Rao, "Model reduction of linear interval systems using Kharitonov's polynomials", *International Conference on Energy, Automation and Signal*, pp. 1-6, 2011.
- [174] Yan Zhe, Pengfei Bi, Z. Zhang and Liwei Niu, "Improved algorithm of model reduction of large scale interval system", *6<sup>th</sup> International Forum on Strategic Technology*, pp. 716-719, 2011.



- [175] K. Kiran Kumar and G. V. K. R. Sastry, "A new method of order reduction for high order interval systems using least square method", *International Journal of Engineering Research and Applications*, vol. 2, no. 2, pp. 156-160, 2012.
- [176] V. G. Pratheep, K. Ramesh and Venkarachalam. Reduced order modeling of uncertain systems by pole clustering technique using Genetic Algorithm. *IEEE-Fourth International Conference on Computing, Communications and Networking Technologies, India*, 2013.
- [177] M. Siva Kumar, N. Vijay Anand, and R. Srinivasa Rao, "Impulse energy approximation of higher order interval system using Kharitonov's polynomials", *Transactions of the Institute of Measurement and Control*, pp. 1-11, 2015.
- [178] O. Ismail, B. Bandyopadhyay, and R. Gorez, "Discrete interval system reduction using Pade approximation to allow retention of dominant poles. *IEEE Transactions on Circuits and Systems*, vol. 44, no. 11, pp. 1075- 1078, 1997.
- [179] J. S. H. Tsai, D. H. Li and L. S. Shieh, "Model conversion of uncertain linear system with input time-delay via interval bilinear approximation method ", *Journal of Franklin Institute*, vol. 334, no.1, pp. 23-40, 1997.
- [180] Younseok Choo, "A note on discrete interval system reduction via retention of dominant poles", *International Journal of Control, Automation, and System*, vol. 5, no. 2, pp. 208-211, 2007.
- [181] T. Babu and N. Papa, "Biased model reduction of discrete interval system using differentiation technique", *IEEE INDICON Conference*, pp. 223-226, 2008.
- [182] V. P. Singh and D. Chandra, "Model reduction of discrete interval system using dominant poles retention and discrete series expansion method", *5<sup>th</sup> International conference on Power Engineering and Optimization*, pp. 27-30, 2011.
- [183] V. P. Singh and D. Chandra, "Reduction of discrete interval system using clustering poles with Pade approximation: a computer-aided approach", *International Journal of Engineering, Science and Technology*, vol. 4, no.1, pp. 97-105, 2012.

- [184] K. Kiran Kumar and G. V. K. R. Sastry, "An approach for interval discrete time systems reduction using least square method", *International Journal of Engineering Research and Applications*, vol. 2, no. 5, pp. 2096- 2099, 2012.
- [185] M. T. Ho, A. Datta and S. P. Bhattacharyya, "Design of P, PI and PID controllers for interval plants", *Proceedings of the American Control Conference*, Philadelphia, pp. 2496-2501, 1998.
- [186] N. Tan and D. P. Atherton, "Stability and performance analysis in an uncertain world", *Computing & Control Engineering Journal*, pp. 91-101, 2000.
- [187] Y. Smagina and I. Brewer, "Robust model P and PI regulator synthesis for a plant with interval parameters in the state space", *Proceedings of the American Control Conference*, Chicago, pp. 1317-1321, 2000.
- [188] J. J. Huang, and Y. J. Wang, "Robust PID tuning strategy for uncertain plants based on the Kharitonov theorem", *ISA Transactions*, vol. 39, pp. 419-431, 2000.
- [189] L. R. Pujara and Arunesh Roy, "On computing stabilizing controllers for SISO interval plants", *Proceedings of the American Control Conference*, Arlington, pp. 3896-3901, 2001.
- [190] N. Tan, I. Kaya, C. Yeroglu and D. P. Atherton, "Computation of stabilizing PI and PID controllers using the stability boundary locus", *Energy Conversion and Managements*, vol. 47, pp. 3045-3058, 2006.
- [191] T. Babu and N. Pappa, "Design of robust PID controller using hybrid algorithm for reduced order interval system", *Asian Journal of Scientific research*, vol. 5, no. 3, pp. 108-120, 2012.
- [192] V. L. Kharitonov, "Asymptotic stability of an equilibrium position of a family of systems of linear differential equations", *Differential Equations*, vol. 14, pp. 1483-1485, 1979.
- [193] B. D. O. Anderson, E. I. Jury and M. Mansour, "On robust Hurwitz polynomials", *IEEE Transactions on Automatic Control*, vol. 32, pp. 909-913, 1987.
- [194] B. R. Barmish, "New tools for Robustness of linear systems", *Proceedings of the 27<sup>th</sup> Conference on Decision and Control*, Austin, Texas, 1988.

- [195] M. Mansour, F. Kraus and B. D. O, “Strong Kharitonov theorem for discrete systems”, *Proceedings of the 27<sup>th</sup> Conference on Decision and Control*, Austin, Texas, 1988.
- [196] B. R. Barmish, “An extreme point result for robust stability of discrete- time interval polynomials”, *Proceedings of the 28<sup>th</sup> Conference on Decision and Control*, Tampa, Florida, pp. 1866-1867, 1989.
- [197] B. R. Barmish, “A generalization of Kharitonov’s four polynomial concept for robust stability problems with linear dependent coefficient perturbations”, *IEEE Transactions on Automatic Control*, vol. 34, no. 2, pp. 157-165, 1989.
- [198] H. Chapellat and S. P. Bhattacharyya, “A generalization of Kharitonov’s Theorem: robust stability of interval plants”, *IEEE Transactions on Automatic Control*, vol. 34, no. 3, pp. 306-311, 1989.
- [199] R. J. Minnichelli, J.J. Anagnost, and C. A. Desoer, “An elementary proof of Kharitonov’s stability theorem with extension”, *IEEE Transactions on Automatic Control*, vol. 34, no. 9, pp. 995-998, 1989.
- [200] R. Tempo, “A dual results to Kharitonov’s theorem”, *IEEE Transactions on Automatic Control*, vol. 35, no. 2, pp. 195-198, 1990.
- [201] A. Rantzer, “Minimal testing stes: a generalization of Kharitonov’s theorem”, *New trends in Systems Theory, The series Progress in Systems and Control Theory*, vol. 7, pp. 614-621, 1991.
- [202] B. R. Barmish and H. I. Kang, “A survey of extreme point results for robustness of control systems”, *Automatica*, vol. 29, no. 1, pp. 13- 35, 1993.
- [203] S. R. Bhattacharyya, H. Chapellat and L. H. Keel, “Robust Control the parametric approach”, *2nd edn. Prentice Hall PTR*, 1995.
- [204] N. E. Martorokis, “Robust stability of polynomials: New approach, *Journal of Optimization Theory and Applications*”, vol. 93, pp. 635-6385, 1997.
- [205] Long Wang, “Kharitonov-like theorems for robust performance of interval systems”, *Journal of Mathematical Analysis and Applications*, vol. 279, pp- 430-441, 2003.
- [206] Y. V. Hote, D. Roy Choudhury and J. R. P. Gupta, “A robust test of uncertain linear systems”, *Journal of Control Theory and applications*, vol. 7, no. 3, pp. 277- 280, 2009.

- [207] Y. V. Hote, J. R. P. Gupta, and D. Roy Choudhury, “Kharitonov’s theorem and Routh criterion for stability margin of interval systems”, *International Journal of Control, Automation and Systems*, vol. 8, no. 3, pp. 647-654, 2010.
- [208] R. Mastusu, “A Graphical approach to robust stability analysis of discrete-time systems with parametric uncertainty”, In: *Proceedings of t21st International DAAAM Symposium, Zadar, Croatia*, 2010.
- [209] R. Mastusu and R. Prokop, “Graphical analysis of robust stability for systems with parametric uncertainty: an overview”, *Transactions of the Institute of Measurements and Control*, vol. 33, no. 2, pp. 274-290, 2011.
- [210] R. Mastusu, R. Prokop and L. Pekar, “Parametric and unstructured approach to uncertainty modelling and robust stability analysis”, *International Journal of Mathematical Models and Methods in Applied Sciences*, vol. 5, no. 6, pp. 1011-1018, 2011.
- [211] R. Mastusu and R. Prokop, “Robust stability analysis of discrete time systems with parametric uncertainty: a graphical approach”, *International Journal of Mathematical Models and Methods in Applied Sciences*, vol. 8, pp. 95-102, 2014.
- [212] Brian Hayes, “A lucid interval”, *American Scientist, Sigma Xi*, vol. 91, no. 6, pp. 484-488, 2003.
- [213] N. Tan and D. P. Atherton, “AISTK- A software package for the analysis of interval systems”, *IEE, Savoy place*, London, U.K, 1999.
- [214] S. M. Rump, “INTLAB- INTerval LABoratory”, In: *Tibor Csendes, editor, Developments in Reliable Computing, Kluwer Academic Publishers*, pp. 77-104, 1999.
- [215] R. Mastusu, “A software tool for algebraic design of interval systems control”, *International Journal of Computational Science and Engineering*, vol. 5, no. 3/4, pp. 262-268, 2010.
- [216] B. K. Ghosh, “Some new results on the simultaneous stabilization of a family single input single output”, *Systems & Control Letters*, vol. 6, pp. 39-45, 1985.
- [217] C. V. Hollot and F. Yang, “Robust stabilization of interval plants using lead or lag compensators”, *Systems & Control Letters*, vol. 14, pp. 9-12, 1990.

- [218] B. R. Barmish, C. V. Holot, F. J. Kraus and R. Tempo, “Extreme points results for robust stabilization of interval plants with first order compensators ”, *IEEE Transactions on Automatic Control*, vol. 38, pp. 1734-1735, 1993.
- [219] S. P. Bhattacharyya and L. H. Keel, “Comments on “extreme point results for robust stabilization of interval plants with first order compensators””, *IEEE Transactions on Automatic Control*, vol. 37, pp. 707-714, 1992.
- [220] M. T. Ho, A. Datta and S. P. Bhattacharyya, “Design of P, PI and PID controllers for interval plants”, *Proceedings of the American Control Conference*, Philadelphia, June, 1989.
- [221] A. Sachan, P. Kumar and P. Rai, “A conglomerating approach for model order reduction of continuous large scale systems”, *International Journal of Innovative Research in Science, Engineering and Technology*, vol. 5, no. 1, pp. 705-710, 2016.
- [222] M. Siva Kumar and G. Begum, “A new biased model order reduction for higher order interval systems”, *Control Engineering*, vol. 14, no. 2, pp. 145-152, 2016.
- [223] B. Gayatri, K. K. Kumar and A. V. S. Lakshmi, “Uncertain systems order reduction by model analysis approach”, *Indian Journal of Science and Technology*, vol. 9, no. 38, pp. 2-9, 2016.