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Controlling general projective synchronization of fractional order Rössler systems. (Controlling general projective synchronization of fractional order Rossler systems.) (English)

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Summary: This paper proposed a method to achieve general projective synchronization of two fractional order Rössler systems. First, we construct the fractional order Rössler system's corresponding approximation integer order system. Then, a control method based on a partially linear decomposition and negative feedback of state errors was utilized on the integer order system. Numerical simulations show the effectiveness of the proposed method.

Editorial remark: There are doubts about a proper peer-reviewing procedure of this journal. The editor-in-chief has retired, but, according to a statement of the publisher, articles accepted under his guidance are published without additional control.

MSC:

[37D45](#) Strange attractors, chaotic dynamics of systems with hyperbolic behavior

Cited in **16 Documents**

[34A08](#) Fractional ordinary differential equations

Full Text: [DOI](#)

References:

- [1] Pecora, L.M.; Carroll, T.L., Synchronization in chaotic systems, *Phys rev lett*, 64, 821, (1990) · [Zbl 0938.37019](#)
- [2] Pecora, L.M.; Carrol, T.L., Driving systems with chaotic signals, *Phys rev A*, 44, 2374-2383, (1991)
- [3] Yassen, M.T., Synchronization hyperchaos of hyperchaotic systems, *Chaos, solitons & fractals*, 37, 465-475, (2008) · [Zbl 1360.34118](#)
- [4] Shahverdiev, E.M.; Hashimova, L.H.; Hashimova, N.T., Chaos synchronization in some power systems, *Chaos, solitons & fractals*, 37, 827-834, (2008)
- [5] Yu, Y., Adaptive synchronization of a unified chaotic system, *Chaos, solitons & fractals*, 36, 329-333, (2008) · [Zbl 1141.93361](#)
- [6] Mohammad, Haeri; Mahsa, Dehghani, Impulsive synchronization of chen's hyperchaotic system, *Phys lett A*, 356, 226-230, (2006) · [Zbl 1160.94398](#)
- [7] Yan, J.; Li, C., Generalized projective synchronization of a unified chaotic system, *Chaos, solitons & fractals*, 26, 1119-1124, (2005) · [Zbl 1073.65147](#)
- [8] Wen, G.; Xu, D., Nonlinear observer control for full-state projective synchronization in chaotic continuous-time systems, *Chaos, solitons & fractals*, 26, 71-77, (2005) · [Zbl 1122.93311](#)
- [9] Samko, S.G.; Kilbas, A.A.; Marichev, O.I., *Fractional integrals and derivatives: theory and applications*, (1993), Gordon & Breach Yverdon · [Zbl 0818.26003](#)
- [10] Podlubny, I., *Fractional differential equations*, (1999), Academic Press New York · [Zbl 0918.34010](#)
- [11] Hilfer, R., *Applications of fractional calculus in physics*, (2001), World Scientific New Jersey · [Zbl 0998.26002](#)
- [12] Yan, J.; Li, C., On chaos synchronization of fractional differential equations, *Chaos, solitons & fractals*, 32, 725-735, (2007) · [Zbl 1132.37308](#)
- [13] Li, C.; Chen, G., Chaos and hyperchaos in the fractional-order rossler equations, *Physica A*, 341, 55, (2004)
- [14] Gao, X.; Yu, J.B., Synchronization of two coupled fractional-order chaotic oscillators, *Chaos, solitons & fractals*, 26, 141-145, (2005) · [Zbl 1077.70013](#)
- [15] Lu, J.G., Chaotic dynamics of the fractional-order Lü system and its synchronization, *Phys lett A*, 354, 305-311, (2006)
- [16] Peng, G., Synchronization of fractional order chaotic systems, *Phys lett A*, (2006)
- [17] Gao, X.; Yu, J.B., Chaos in the fractional order periodically forced complex duffing's oscillators, *Chaos, solitons & fractals*, 24, 1097-1104, (2005) · [Zbl 1088.37046](#)
- [18] Zhang, H.B.; Li, C.G.; Chen, G.R.; Gao, X., Hyperchaos in the fractional-order nonautonomous chen's system and its synchronization, *Mod phys C*, 16, 815, (2005) · [Zbl 1103.37304](#)
- [19] Bagley, R.L.; Calico, R.A., Fractional order state equations for the control of viscoelastically damped structures, *J guid cont*

dyn, 14, 304, (1991)

- [20] Charef, A.; Sun, H.H.; Tsao, Y.Y.; Onaral, B., Fractal system as represented by singularity function, IEEE trans autom control, 37, 1465, (1992) · [Zbl 0825.58027](#)
- [21] Ahmad, W.M.; Harb, A.M., On nonlinear control design for autonomous chaotic systems of integer and fractional orders, Chaos, solitons & fractals, 18, 693, (2003) · [Zbl 1073.93027](#)

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