



Mohammad Reza Kolahchi

Professor

IASBS, Department of Physics

Publications

Journals

- A. E. Botha, M. Ansariara, S. Emadi, and M. R. Kolahchi, "Chimera patterns of synchrony in a frustrated array of Hebb synapses", *Front. Comput. Neurosci.*, Vol. 16, 2022
- Yu. M. Shukrinov, I. R. Rahmonov, A. Janalizadeh, and M. R. Kolahchi, "Anomalous Gilbert damping and Duffing features of the superconductor-ferromagnet-superconductor ϕ 0 Josephson junction", *Phys. Rev. B* , Vol. 104, 2021
- A Janalizade, MR Kolahchi, "Effect of Synchronization on the Fractal Basin Boundary of the Duffing Oscillator", 13th Chaotic Modeling and Simulation International Conference, Vol. 13, 2020
- M. Ansariara, S. Emadi, V. Adami, A. E. Botha, M. R. Kolahchi , "Signs of memory in a plastic frustrated Kuramoto model of neurons", *Nonlinear Dynamics* , Vol. 100, 2020
- André E. Botha & Mohammad R. Kolahchi , "Analysis of chimera states as drive-response systems", *Scientific Reports*, Vol. 8, 2018
- M. R. Kolahchi, A. E. Botha & Yu. M. Shukrinov , "Chimera States in an Intrinsically Coupled Stack of Josephson Junctions", *Journal of Superconductivity and Novel Magnetism* , Vol. 30, 2017



- AE Botha, Yu M Shukrinov, MR Kolahchi, "A Farey staircase from the two-extremum return map of a Josephson junction", *Nonlinear Dynamics*, Vol. 84, 2016
- AE Botha, Yu M Shukrinov, S Yu Medvedeva, MR Kolahchi, "Structured chaos in 1-d stacks of intrinsic Josephson junctions irradiated by electromagnetic waves", *Journal of Superconductivity and Novel Magnetism*, Vol. 28, 2015
- Yu. M. Shukrinov, A. E. Botha, S. Yu. Medvedeva, M. R. Kolahchi and A. Irie, "Structured chaos in a devil's staircase of the Josephson junction", *Chaos: An Interdisciplinary Journal of Nonlinear Science*, Vol. 24, 2014
- A.E.Botha, Yu.M.Shukrinov, M.R.Kolahchi, "Onset of chaos in intrinsic Josephson junctions", *Chaos, Solitons & Fractals*, Vol. 48, 2013
- Yu. M. Shukrinov, S. Yu. Medvedeva, A. E. Botha, M. R. Kolahchi, and A. Irie, "Devil's staircases and continued fractions in Josephson junctions", *Physical Review B* , Vol. 88, 2013
- MR Kolahchi, YM Shukrinov, M Hamdipour, AE Botha, M Suzuki, "Some chaotic features of intrinsically coupled Josephson junctions", *Physica C: Superconductivity and its Applications The 8th International Symposium on Intrinsic Josephson Effects and Plasma Oscillations in High-Tc Superconductors (PLASMA 2012)*, Vol. 491, 2013
- Yu.M.Shukrinov, M.Hamdipour, M.R.Kolahchi, A.E.Botha, M.Suzuki, "Manifestation of resonance-related chaos in coupled Josephson junctions", *Physics Letters A*, Vol. 376, 2012
- A. Valizadeh, M. R. Kolahchi, and J. P. Straley, "Single phase-slip junction site can synchronize a parallel superconducting array of linearly coupled Josephson junctions", *Physical Review B* , Vol. 82, 2010
- A Valizadeh, Kh Jahanbani, MR Kolahchi, "Dynamics of a Bose-



Einstein condensate in a horizontally vibrating shallow optical lattice", *Physical Review A*, Vol. 81, 2010

- Yu. M. Shukrinov, M. Hamdipour, and M. R. Kolahchi, "Effect of interjunction coupling on superconducting current and charge correlations in intrinsic Josephson junctions", *PHYSICAL REVIEW B*, Vol. 80, 2009
- M.R. Kolahchi, "Synchronization effects in a strongly coupled nanomechanical single-electron transistor", *Journal of Physics: Conference Series*, Vol. 129, 2008
- A Valizadeh, MR Kolahchi, JP Straley, "On the origin of fractional shapiro steps in systems of josephson junctions with few degrees of freedom", *Journal of Nonlinear Mathematical Physics*, Vol. 15, 2008
- F. Osanloo, M. R. Kolahchi, S. McNamara, and H. J. Herrmann, "Sediment transport in the saltation regime", *PHYSICAL REVIEW E*, Vol. 78, 2008
- A Valizadeh, MR Kolahchi, JP Straley, "Fractional Shapiro steps in a triangular single-plaquette Josephson-junction array", *Physical Review B* , Vol. 76, 2007
- A Nahal, J Mostafavi-Amjad, A Ghods, MRH Khajehpour, SNS Reihani, MR Kolahchi, "Laser-induced dendritic microstructures on the surface of Ag⁺-doped glass", *Journal of applied physics*, Vol. 100, 2006
- H Fazli, R Golestanian, PL Hansen, MR Kolahchi, "Rod-like polyelectrolyte brushes with mono-and multivalent counterions", *EPL (Europhysics Letters)*, Vol. 73, 2005
- Ramin Golestanian, M.R.H. Khajehpour, M.R. Kolahchi, S. Rouhani, "Statistical physics of complex fluids", *Journal of Physics: Condensed Matter*, Vol. 17, 2005
- Hossein Fazli, Ramin Golestanian, and Mohammad R. Kolahchi,



"Orientational ordering and dynamics of rodlike polyelectrolytes", PHYSICAL REVIEW E, Vol. 72, 2005

- Mohammad R. Kolahchi and Joseph P. Straley, "Ground states of a frustrated kagomé array of Josephson junctions", Physical Review B , Vol. 66, 2002
- Mohammad R. Kolahchi, "Some Aspects of Dynamics of Josephson-Junction Array at Golden Mean Frustration", Annual Reviews Of Computational Physics VIII, 2001
- Mohammad R. Kolahchi and Hossein Fazli, "Behavior of a Josephson-junction array with golden mean frustration", Physical Review B , Vol. 62, 2000
- Mohammad R. Kolahchi, "Ground state of uniformly frustrated Josephson-junction arrays at irrational frustration", Physical Review B , Vol. 59, 1999
- D. Arasteh and M.R. Kolahchi, "LZ complexity in chaotic dynamical systems and the quasiperiodic Fibonacci sequence", Iranian Journal of Physics Research, Vol. 1, 1998
- Mohammad R. Kolahchi, "Finding local minimum states of Josephson-junction arrays in a magnetic field", Physical Review B , Vol. 56, 1997
- Mohammad R. Kolahchi and Joseph P. Straley, "Ground state of the uniformly frustrated two-dimensional XY model near $f=1/2$ ", Physical Review B , Vol. 43, 1991