# Shivaji College Faculty Details Proforma

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|---|---|---|---|---|---|---|
| **Title** | **Dr.** | **First Name** | **Umeshkanta Singh** | **Last Name** | **Thounaojam** | **Photograph** |
| **Designation** | | **Assistant Professor (Ad-hoc)<br>Department of Physics** | | | |  |
| **Address** | | **B-50, Kalyan Apartments, DDA Flats, Kalyan Vihar, Delhi-110009** | | | | |
| **Office Phone No.** | | | | | | |
| **Residence** | | | | | | |
| **Mobile** | | | | | | |
| **Email** | | **umeshkanta@gmail.com** | | | | |
| **Web-Page** | | **https://sites.google.com/site/umeshkanta/home** | | | | |
| **Educational Qualifications** | | **Ph.D** | | | | |
| **Degree** | | **University/Institute** | | | | **Year** |
| **Ph.D.** | | **Jawaharlal Nehru University** | | | | **2011** |
| **M.Phil./M.Tech.** | | | | | | |
| **PG** | | **University of Delhi** | | | | **2003** |
| **UG** | | **University of Delhi** | | | | **2001** |
| **Any Other Qualification** | | | | | | |
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| **Career Profile** | | | | | | |

## Administrative Assignments

## Areas of Interest/Specialisation

**Nonlinear Dynamics, Computational Neuroscience, Stochastic Chemical Kinetics, Complex Systems**

## Subjects Taught

**Mathematical Physics, Statistical Physics, Mechanics, Waves and Optics**

## Innovation Project/Research Projects (Major Grants/Research Collaboration)

## Publications Profile (*Research Papers/Books)*

1. ***Phase-flip in relay oscillators via linear augmentation***

   **Umeshkanta Singh Thounaojam** and Manish D. Shrimali

   Chaos, Solitons & Fractals 107, 5-12 (2018).

2. ***Phase switching in relaying Hindmarsh-Rose neurons***

   **Umeshkanta S. Thounaojam**, Pooja R. Sharma, and Manish D. Shrimali

   Eur. Phys. J. Special Topics, **225**, 17 (2016)

3. ***Slow Noise in the Period of a Biological Oscillator Underlies Gradual Trends and Abrupt Transitions in Phasic Relationships in Hybrid Neural Networks***

**Umeshkanta S. Thounaojam**, Jianxia Cui, Sharon E. Norman, Robert J. Butera, and Carmen C. Canavier

PLoS Comput Biol 10(5): e1003622. doi:10.1371/journal.pcbi.1003622 (2014)

4. ***Phantom instabilities in adiabatically driven systems: Dynamical sensitivity to computational precision***

H. H. Jafri, **Thounaojam Umeshkanta Singh**, and R. Ramaswamy

Chaos **22**, 033103 (2012).

5. ***Excitable nodes on random graphs: Relating dynamics to structure***

**Thounaojam Umeshkanta Singh**, K. Manchanda, R. Ramaswamy, and A. Bose

SIAM J. Appl. Dyn. Syst. **10,** pp. 987-1012 (2011).

6. ***Dynamics of excitable nodes on random graphs***

K. Manchanda, **Th. Umeshkanta Singh**, and R. Ramaswamy

Pramana **77**, pp. 1-7 (2011).

7. ***Transition to weak generalized synchrony in chaotically forced flows***

**Thounaojam Umeshkanta Singh**, H. H. Jafri, and R. Ramaswamy

Phys. Rev. E 80, 016208 (2010).

8. ***Scenarios for generalized synchronization with chaotic forcing***

**Thounaojam Umeshkanta Singh,** A. Nandi, and R. Ramaswamy

Phys. Rev. E 78, 025205(R) (2008).

9. ***Coexisting attractors in periodically modulated logistic maps***

**Thounaojam Umeshkanta Singh,** A. Nandi, and R. Ramaswamy

Phys. Rev. E 77, 066217 (2008).

## Conference/Seminar/Faculty Development Programme/Workshop

2017

• Presented a talk 'Direct Coupling: An important mechanism for signal processing of natural systems' at Dynamics Days-XII, Ashoka University, Sonepat, Haryana, India on November 25, 2017.

2015

• Co-supervised Computational Lab for SERC School on Nonlinear Dynamics at Manipur University, India from November 18 to 21, 2015.

• Participated CAMP 2015 'Computational Approaches to Memory and Plasticity at NCBS, Bangalore', A 16-day summer school on the theory and simulation of learning, memory and plasticity in the brain at National Centre for Biological Sciences, Bangalore, India from June 27 to July 12, 2015.

2014

• Presented a talk 'Modeling Dynamical Systems in Biology' at DST-SERC School on Nonlinear Dynamics, Central University of Rajasthan, India from December 1-20, 2014.

• Presented a talk 'Coexistence of live and death oscillators' at Dynamics Day Rajasthan : Interdisciplinary Symposium on Complex Systems, Central University of Rajasthan, India from November 29, 2014.

• Attended 'Aneesur Rehman day-Symposium on Molecular Simulations' at University of Hyderabad, Hyderabad, India from August 24, 2014. • Presented a talk 'Controlling dynamics of relay oscillators' at Dynamics Days Asia- Pacific 08 at Indian Institute of Technology, Madras, India. July 21-24, 2014.

2013

• Presented a talk 'Slow noise in the period of biological oscillator underlies gradual trends and abrupt transitions in phasic relationships in hybrid neural networks' at Symposium on Complex Systems: From Physics to Biology, Jawaharlal Nehru University, New Delhi, India from October 15-16, 2013.

• Presented a poster 'Intrinsic noise drift accounts for variability in hybrid neural circuits' at FACM conference 2013: Frontiers in Applied and Computational Mathematics, New Jersey Institute of Technology, Newark, New Jersey, USA from May 31st to June 2, 2013.

• Presented a poster 'Intrinsic noise drift accounts for variability in hybrid neural circuits' at Workshop: Rhythms and Oscillations, Mathematical Bioscience Institute, The Ohio State University, Ohio, USA from March 18-22, 2013.

2012

• Attended Neuroscience 2012, Society for Neuroscience's 42nd annual meeting, New Orleans, Louisiana, USA from October 13 -17, 2012.

• Attended 21st Annual Meeting for Computational Neuroscience CNS 2012, Atlanta/Decatur, USA, July 21-26, 2012.

2011

• Presented a poster 'Excitable nodes on random graphs: Structure and dynamics' at US Dynamics Days 2011, Chapel Hill, North Carolina, USA from January 5-8, 2011.

2010

• Presented a talk 'Excitable nodes on random graphs: Structure and dynamics' at International conference on Perspective on Nonlinear dynamics, Institute of Science, Bangalore, India from July 26-29, 2010.

2009

• Presented a paper 'Weak generalized synchronization in forced excitable systems' at NDES2009: The 17th International IEEE conference 'Nonlinear dynamics of electronic systems', Rapperswil Switzerland from June 21-24, 2009.

• Presented a poster 'Strange nonchaotic limit sets' at CHAOS2009: The 2nd Chaotic modeling and simulation international conference, Chania, Crete, Greece from June 1-5, 2009.

2008

• Presented a talk 'Generalized synchronization and its manifestation' at Dynamics Day Delhi, Department of Physics and Astrophysics, University of Delhi, Delhi, India on November 15, 2008. • Presented a poster 'Scenarios of generalized synchronization with chaotic forcing' at International Conference on Nonlinear Dynamical Systems and Turbulence, Indian Institute of Science, Bangalore, India from July 17-22, 2008.

• Presented a poster 'Coexisting attractors in modulated logistic map' at International Conference on Recent Developments in Nonlinear Dynamics, School of Physics, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India from February 13-16, 2008.

**Research Guidance (*Supervision of Doctoral Thesis/Dissertations*)**

M.Sc projects guided

1. Samar Bahadur Mallah, CURAJ

Title: ***Study of chemical kinetics and exact stochastic simulation***

2. Neeraj Kulhari, CURAJ

***Study of oscillating chemical reactions by stochastic simulation approach***

3. Kumawat Kishor, CURAJ

***Experimental study of oscillating chemical reactions and exact stochastic simulation***

4. Amit Jangid, CURAJ

***Study of biophysical properties of neurons, modeling and synchronization***

5. Sukesh Kumar Kumawat, CURAJ

***Study of synchronization of coupled Hindmarsh-Rose neurons***

**Awards and Distinctions**

**CSIR JRF-NET**

**Memberships**

**Other Academic Activities**

| Cultural/Extracurricular Activities |
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Th. Umeshkanta Singh

**Signature of Faculty Member**