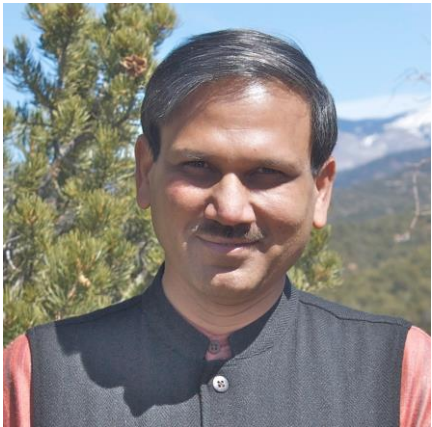




University Faculty Details Page on DU Web-site

Title	Prof.	First Name	Sanjay	Last Name	Jain	Photograph
Designation		Professor				
Department		Department of Physics and Astrophysics				
Address	(Campus)	Room No. 153, Multistorey Block, Department of Physics and Astrophysics, University of Delhi, Delhi 110 007				
	(Residence)	51 Bharati Artists Colony, Vikas Marg, Delhi 110 092				
Phone No	(Campus)	+91-11-2766 7725 (Extn. 1342)				
	(Residence)optional	+91-11-2245 6389				
Mobile		+91-98731 20534				
Fax		+91-11-2766 7061				
Email		jain@physics.du.ac.in, jain_physics@yahoo.co.in				
Web-Page		http://people.du.ac.in/~jain/				
Education						
Subject		Institution		Year		Details
Ph.D. Theoretical Physics		Tata Institute of Fundamental Research, Mumbai		1987		Thesis topic: Conformally invariant field theory in two dimensions and strings in curved spacetime.
M.Sc.		Department of Physics and Astrophysics, University of Delhi		1981		Subjects: Physics
B.Sc. (Honours)		St. Stephen's College, University of Delhi		1979		Subjects: Physics
Career Profile						
Organisation / Institution		Designation		Duration		Role
Physics Department, Brown University		Research Associate		1987 - 1990		Research
Physics Department, Harvard University		Research Associate		1990 - 1992		Research
Centre for Theoretical Studies, Indian Institute of Science		Assistant Professor Associate Professor		1992 - 2000 2000 - 2004		Research & Teaching
Santa Fe Institute		Visiting Professor		1999 - 2000		Research
Department of Physics and Astrophysics, University of Delhi		Professor		2002 - present		Teaching & Research
Research Interests / Specialization						
<ul style="list-style-type: none"> • Theoretical systems biology • Structure and dynamics of complex networks, including chemical, biological, and socio-economic networks • Mathematical modeling of complex adaptive systems, evolutionary mechanisms • Models of non-equilibrium statistical mechanics • Nonlinear dynamics, random matrix models and quantum chaos • Quantum field theory, superstring theory and quantum gravity 						
Teaching Experience (Subjects/Courses Taught)						
At University of Delhi						
<ul style="list-style-type: none"> • Complex Systems and Networks • Statistical Mechanics • Classical Mechanics 						

<ul style="list-style-type: none"> • Quantum Mechanics I, II • Radiation Theory • Waves and Optics Laboratory <p>At Indian Institute of Science</p> <ul style="list-style-type: none"> • Classical Mechanics • Electromagnetic Theory • Statistical Mechanics • Quantum Field Theory - For preliminary SERC School in High Energy Physics. 																												
<p>Honors & Awards</p> <ul style="list-style-type: none"> • Fellow, Indian Academy of Sciences, Bangalore, India. • Member of the External Faculty, Santa Fe Institute, Santa Fe, NM, USA (2000-2006, 2007-present). • Senior Associate of the International Centre for Theoretical Sciences - TIFR, Bangalore (since 2013) • Honorary Faculty Member, Condensed Matter Theory Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India (1995-2014). • Associate Member of the Abdus Salam International Centre for Theoretical Physics, Trieste (1996-2003) • Recipient of National Science Talent Scholarship, 1976 																												
<p>Publications (LAST FIVE YEARS)</p>																												
<p><u>In Indexed/ Peer Reviewed Journals</u></p> <table border="1"> <thead> <tr> <th><u>Year of Publication</u></th> <th><u>Title</u></th> <th><u>Journal</u></th> <th><u>Co-Author</u></th> </tr> </thead> <tbody> <tr> <td>2012</td> <td>The origin of large molecules in primordial autocatalytic reaction networks</td> <td><i>PLoS One</i> 7(1): e29546. DOI:10.1371/journal.pone.0029546</td> <td>Varun Giri</td> </tr> <tr> <td>2013</td> <td>Flux-based classification of reactions reveals a functional bow-tie organization of complex metabolic networks</td> <td><i>Phys. Rev. E</i> 87, 052708 (2013). DOI:10.1103/PhysRevE.87.052708</td> <td>S. Singh, A. Samal, V. Giri, S. Krishna and N. Raghuram</td> </tr> <tr> <td>2013</td> <td>Bistability in a model of early B cell receptor activation and its role in tonic signaling and system tunability</td> <td><i>Mol. BioSyst.</i>, 9, 2498-2511, (2013). DOI:10.1039/C3MB70099B</td> <td>Srikanth R. and K. V. S. Rao</td> </tr> <tr> <td>2013</td> <td>A genome-wide association study reveals ARL15, a novel non-HLA susceptibility gene for Rheumatoid arthritis in north Indians</td> <td><i>Arthritis & Rheumatism</i>, 2013, DOI:10.1002/art.38110</td> <td>S. Negi et al</td> </tr> <tr> <td>2014</td> <td>Genome-wide association scan in north Indians reveals three novel HLA-independent risk loci for ulcerative colitis</td> <td><i>Gut</i>, doi:10.1136/gutjnl-2013-306625</td> <td>G. Juyal et al</td> </tr> <tr> <td>2014</td> <td>Genome-wide analysis of methotrexate pharmacogenomics in rheumatoid arthritis shows multiple novel risk variants and leads for TYMS regulation</td> <td><i>Pharmacogenetics and Genomics</i> 24, 211-219 (2014)</td> <td>S. Senapati et al</td> </tr> </tbody> </table>	<u>Year of Publication</u>	<u>Title</u>	<u>Journal</u>	<u>Co-Author</u>	2012	The origin of large molecules in primordial autocatalytic reaction networks	<i>PLoS One</i> 7(1): e29546. DOI:10.1371/journal.pone.0029546	Varun Giri	2013	Flux-based classification of reactions reveals a functional bow-tie organization of complex metabolic networks	<i>Phys. Rev. E</i> 87, 052708 (2013). DOI:10.1103/PhysRevE.87.052708	S. Singh, A. Samal, V. Giri, S. Krishna and N. Raghuram	2013	Bistability in a model of early B cell receptor activation and its role in tonic signaling and system tunability	<i>Mol. BioSyst.</i> , 9, 2498-2511, (2013). DOI:10.1039/C3MB70099B	Srikanth R. and K. V. S. Rao	2013	A genome-wide association study reveals ARL15, a novel non-HLA susceptibility gene for Rheumatoid arthritis in north Indians	<i>Arthritis & Rheumatism</i> , 2013, DOI:10.1002/art.38110	S. Negi et al	2014	Genome-wide association scan in north Indians reveals three novel HLA-independent risk loci for ulcerative colitis	<i>Gut</i> , doi:10.1136/gutjnl-2013-306625	G. Juyal et al	2014	Genome-wide analysis of methotrexate pharmacogenomics in rheumatoid arthritis shows multiple novel risk variants and leads for TYMS regulation	<i>Pharmacogenetics and Genomics</i> 24, 211-219 (2014)	S. Senapati et al
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<p><u>Articles</u></p> <p><u>Book Chapters</u></p> <ol style="list-style-type: none"> 1. Can we recognize an innovation?: Perspective from an evolving network model S. Jain and S. Krishna, in <i>Econophysics and Sociophysics: Trends and Perspectives</i>, edited by B. K. Chakrabarti et al 																												

(Wiley-VCH, Weinheim, 2006), p. 561-592. Reprinted in *Principles of Evolution* edited by H. Meyer-Ortmanns and S. Thurner (Springer-Verlag, Berlin Heidelberg 2011), p. 145-173.

Conference Presentations

1. Evolution of Complex Systems, January 13-15, 2010, at Indian Institute of Science, Bangalore.
Invited talk: Formalizing the notion of 'innovation' in an evolutionary model
2. Symposium on "Application of Control Theory and Optimization Techniques in Biochemical Pathways", Satellite Conference of the International Congress of Mathematicians 2010, at Hyderabad International Convocation Centre, August 16-18, 2010.
Invited talk: Structure and dynamics of feedback in the large scale genetic regulatory network of E. Coli
3. Biophysical Society 55th Annual Meeting, March 5-9, 2011, Baltimore Session on "Contribution of Network theory to Biology".
Invited talk: The large scale genetic regulatory network of E. Coli: Understanding functional robustness at the system level
4. Workshop on Network: Structure and Function, Nov 4-5, 2011, at IISc, Bangalore.
Invited talk: Nested autocatalytic networks: A mechanism for the primordial origin of large molecules
5. International Conference on Mathematical and Theoretical Biology, at VITS Hotel Pune, January 23-27, 2012, organized by IISER Pune and The Society for Mathematical Biology.
Invited talk: The large scale genetic regulatory network of E. Coli: Implication for system level robustness
6. Workshop on Social Networks, February 20-24, 2012, at IISc Chennai.
Invited talk: Complex systems and social networks: Modeling Innovation and economic growth through evolving networks
7. 16th Popli Memorial Lectures, at St. Stephen's College, Complex systems and Networks, February 29-March 2, 2012.
8. International Conference on Networks in Biology, Social Sciences and Engineering, July 12-14, 2012, at IISc Bangalore.
Invited talk: : Nested autocatalytic networks: A mechanism for the primordial origin of large molecules
9. Summer School on "DNA Dynamics and Life Strategies", August 12-18, 2012, at Humlebaek, Denmark.
Invited talk: Structure and dynamics of feedback in the large scale genetic regulatory network of E. Coli
10. Winter School on Quantitative Systems Biology, November 26 – December 7, 2012, at International Centre for Theoretical Physics, Trieste, Italy.
Invited talk: Structure and dynamics of feedback in the large scale genetic regulatory network of E. Coli
11. Symposium on Complex Systems from Physics to Biology, October 15-16, 2013, at Jawaharlal Nehru University, New Delhi.
Invited talk: Feedback and modularity in intracellular biochemical networks
12. Instructional School on Mathematical and Computational Biology, May 15-29, 2014, at IISER Mohali
Invited lecture series: Introduction to Networks
13. Workshop on the Economy of a Cell: Resource Allocation, Trade-Offs and Efficiency in Living Systems, 23-27 June 2014, at International Centre for Theoretical Physics, Trieste, Italy
Invited talk: Balanced growth in toy mathematical models of growing-dividing cells
14. International Conference on Mathematical and Computational Biology, February 28 – March 2, 2015, at IIT Kanpur
Invited talk: Self-organization in models of cell growth and division
15. Interdisciplinary Conference on the Science and Applications of Networks, March 20-22, 2015, Shiv Nader University
Invited talk: Self-organization in intracellular biochemical networks of growing-dividing cells
16. Workshop and Summer School on Models of Life, August 2-8, at Humlebaek, Denmark
Invited talk: Growth-division dynamics and global regulation in bacteria

Total Publication Profile optional

In Indexed/ Peer Reviewed Journals

36 publication in Journals

<p>Articles</p> <p>4 book chapters</p> <p>3 conference proceedings</p>
<p><u>Conference Presentations</u></p>
<p>Public Service / University Service / Consulting Activity</p> <ul style="list-style-type: none"> • Member of Governing body of several colleges • Member of selection committees for appointment/promotion of college principals and teachers • Vice-Chancellor's nominee in DRC of Department of Geology and BRS of Faculty of Inter-disciplinary sciences • Member of several committees of University
<p>Professional Societies Memberships</p>
<p>Projects (Major Grants / Collaborations)</p> <ul style="list-style-type: none"> • Co-investigator, DBT COE project titled "Whole Genome Association Analyses in Complex Diseases: An Indian Initiative", 2008 – present • Delhi Node Coordinator, National Network in Mathematical and Computational Biology, funded by Science and Engineering Research Board, GOI, 2013 -- present
<p>Other Details</p> <p>Membership of Editorial Boards of Journals:</p> <ul style="list-style-type: none"> • Member of the Editorial Board of <i>Theory in Biosciences</i> (Elsevier). • Member of the Editorial Board of <i>Artificial Life</i> (MIT Press). <p>Ph.D. students supervised:</p> <ul style="list-style-type: none"> • Sandeep Krishna (presently Associate Professor at the National Centre for Biological Sciences, Bangalore) • Areejit Samal (presently Fellow at the Institute of Mathematical Sciences, Chennai) • Shalini Singh (presently Education Officer, University Grants Commission, New Delhi) • Varun Giri (presently Postdoctoral Researcher at University of Saarland, Saarbrucken, Germany) • Srikanth Ravichandran (presently Research Associate at University of Luxembourg, Luxembourg) <p>Organization of conferences:</p> <ul style="list-style-type: none"> • Member – Organizing Committee: Winter School on Quantitative Systems Biology, December 7-20, 2015, International Centre for Theoretical Sciences, Bangalore • Member – Scientific Committee: Winter School on Quantitative Systems Biology, December 1-12, 2014, International Centre for Theoretical Physics, Trieste, Italy • Member – Organizing Committee: Winter School on Quantitative Systems Biology, December 8-20, 2013, International Centre for Theoretical Sciences, Bangalore • Member – Organizing Committee: School and International Conference on Networks in Biology, Social Science and Engineering, July 2-14, 2012, Indian Institute of Science, Bangalore • Member - Programme Committee: European Conference in Complex Systems 2007 (ECCS'07), 1-5 October, 2007 at Dresden, Germany. • Member - Programme Committee: European Conference in Complex Systems 2006 (ECCS'06), 25-29 September, 2006 at Oxford University, UK. • Convener: Millennium Meeting on String Theory, 3-7 January, 2000 at Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR), Indian Institute of Science Campus, Bangalore