Curriculum Vitae di Mario Nicodemi

INFORMAZIONI ANAGRAFICHE

Nome: **MARIO NICODEMI**

Affiliazione: Dipartimento di Fisica *"E. Pancini"*, Università di Napoli *Federico II*, Complesso Universitario di Monte Sant'Angelo, Via Cintia 4, 80126 Napoli, Italia

Ruolo: Professore Ordinario di Fisica Teorica SC: 02/A2

CARRIERA

Presente

2017-2022 *Einstein BIH Visiting Professor*, Max Delbrück Centre, Berlin, DE
2017- *Prof. Ordinario* Fisica Teorica, Dip.to di Fisica, Univ. di Napoli *Federico II*, IT

Passato

2011-2017 *Prof. Associato* Fisica Teorica, Dip.to di Fisica, Univ. di Napoli *Federico II*, IT
2000-2011 *Ricercatore*, Dip.to di Fisica, Univ. di Naples *Federico II*, IT
1999-2000 *Research Associate*, Imperial College, London, UK
1996-1999 *PostDoc* INFM e *A.Della Riccia Research Fellow* ESPCI, Paris, FR

FORMAZIONE

1996 *Dottorato in Fisica Teorica*, Università di Napoli *Federico II*, IT
1992 *Laurea cum Laude in Fisica*, Università di Napoli *Federico II*, IT

PRINCIPALI RICONOSCIMENTI

2022 *Medaglia e Premio Occhialini* della SIF e IOP.
2016 *Einstein BIH Fellowship Award*, Einstein Foundation, Berlin, DE

ATTIVITA' DIDATTICA

Ho tenuto corsi e lezioni presso università italiane e all'estero. Alla *Federico II*, in particolare, tengo il corso di *Sistemi Complessi* della Laurea Magistrale in Fisica e di *Fisica Moderna* presso la Triennale in Fisica.

Elenco principali corsi tenuti

1) 2021-22, "Meccanica Statistica", Laurea Triennale in Fisica, Univ. di Napoli *Federico II.*
2) 2004-22, "Sistemi Complessi", Laurea Magistrale in Fisica, Univ. di Napoli *Federico II*.
3) 2018-21, "Fisica Moderna", Laurea Triennale in Fisica, Univ. Napoli *Federico II.*
4) 2012-18, "Fisica Generale I", Laurea Triennale in Informatica, Univ. Napoli *Federico II*.
5) 2012-18, "Fisica Generale I", Triennale in Ingegneria, Univ. di Napoli *Federico II*.

6) 2009-18,19-20, "Bioinformatica", L. Magistrale in Informatica, Univ. Napoli *Federico II*.
7) 2002-09, "Meccanica Statistica e Informatica", Informatica, Univ. di Napoli *Federico II*.
8) 2003-07, "Abilità Informatiche", Facoltà di Giurisprudenza, Univ. di Napoli *Federico II*.
9) 2001-02, "Fisica Generale", Facoltà di Farmacia, Univ. di Napoli *Federico II*.

ATTIVITA' DI GESTIONE

Dal 2019 sono il Coordinatore del Gruppo di Fisica Teorica della Sezione INFN di Napoli. Dal 2015 sono il Coordinatore Nazionale dell'*Iniziativa Specifica "Fisica Biologica"* dell'*INFN***.** Sono stato membro di diversi panel e progetti internazionali per la gestione della ricerca e delle sue risorse, incluso l'*Agence Nationale de la Recherche* in Francia, il consorzio *The 4D Nucleome* del National Institute of Health (*NIH*) negli USA, e il *Berlin Institute for Health* in Germania. Ho partecipato a progetti EU come *ITN Marie Curie* e nazionali, come *PRIN*. Presso la *Federico II* sono nel Collegio di Dottorato in Fisica.

ATTIVITA' DI RICERCA

Il mio gruppo di ricerca lavora nel campo della *Meccanica Statistica dei Sistemi Complessi in Fisica*, in particolare su sistemi vetrosi e materiali granulari, e delle sue applicazioni alla *Biologia Molecolare*, sulla regolazione e organizzazione del genoma dei mammiferi, combinando modelli di fisica, simulazioni al computer e analisi di dati sperimentali. Ho pubblicato su riviste internazionali (incluso *Nature*, *PNAS*, *PRL*) oltre 150 *articoli* scientifici con circa 7400 *citazioni* (*h-index*=46).

ELENCO PRINCIPALI PUBBLICAZIONI SCIENTIFICHE

159 M. Conte, E. Irani, A. M. Chiariello, A. Abraham, S. Bianco, A. Esposito, M. Nicodemi, *Loop-extrusion and polymer phase-separation can co-exist at the single-molecule level to shape chromatin folding*, **Nature Com**. 13, 4070 (2022).

158 G. Scala, F. Gorini, S. Ambrosio, A. M. Chiariello, M. Nicodemi, L. Lania, B. Majello and S. Amente. *8-oxodG accumulation within super-enhancers marks fragile CTCF-mediated chromatin loops.* **NAR** 50, 6 (2022).

157 A. Esposito, S. Bianco, A.M. Chiariello, A. Abraham, L. Fiorillo, M. Conte, R. Campanile, M. Nicodemi. *Polymer physics reveals a combinatorial code linking 3D chromatin architecture to 1D chromatin states.* **Cell Reports** 38, 110601 (2022).

156 A. M. Chiariello, S. Bianco, A. Esposito, L. Fiorillo, M. Conte, E. Irani, F. Musella, A. Abraham, A. Prisco, and M. Nicodemi. *Physical mechanisms of chromatin spatial organization.* **FEBS** Jour., 289, 1180 (2022).

155 L. Poeta, M. Malacarne, A. Padula, D. Drongitis, L. Verrillo, M.B. Lioi, A.M. Chiariello, S. Bianco, M. Nicodemi, M. Piccione, E. Salzano, D. Coviello, M.G. Miano. *Further Delineation of Duplications of ARX Locus Detected in Male Patients with Varying Degrees of Intellectual Disability*. *Int. J. Mol. Sci.* 23, 3084 (2022).

154 W. Winick-Ng, A. Kukalev, I. Harabula, L. Zea-Redondo, D. Szabó, M. Meijer, L. Serebreni, Y. Zhang, S. Bianco, A.M. Chiariello, I. Irastorza-Azcarate, C. J. Thieme, T.M. Sparks, S. Carvalho, L. Fiorillo, F. Musella, E. Irani, E. Torlai Triglia, A.A. Kolodziejczyk, A. Abentung, G. Apostolova, E.J. Paul, V. Franke, R. Kempfer, A. Akalin, S.A. Teichmann, G. Dechant, M.A. Ungless, M. Nicodemi, L. Welch, G. Castelo-Branco, A. Pombo. *Cell-type specialization is encoded by specific chromatin topologies*. **Nature** 599, 684 (2021).

153 L. Fiorillo, F. Musella, M. Conte, R. Kempfer, A.M. Chiariello, S. Bianco, A. Kukalev, I. Irastorza-Azcarate, A. Esposito, A. Abraham, A. Prisco, A. Pombo, M. Nicodemi. *Comparison of the Hi-C, GAM and SPRITE methods by use of polymer models of chromatin.* **Nature Meth.** 18, 482 (2021).

152 H. Huang, Q. Zhu, A. Jussila, Y. Han, B. Bintu, C. Kern, M. Conte, Y. Zhang, S. Bianco, A. Chiariello, M. Yu, R. Hu, I. Juric, M. Hu, M. Nicodemi, X. Zhuang, B. Ren. *CTCF Mediates Dosage and Sequence-context-dependent Transcriptional Insulation through Formation of Local Chromatin Domains.* **Nature Genetics** 53, 1064 (2021).

151 N. Kubo, H. Ishii, X. Xiong, S. Bianco, F. Meitinger, R. Hu, J.D. Hocker, M. Conte, D. Gorkin, M. Yu, B. Li, J.R. Dixon, M. Hu, M. Nicodemi, H. Zhao, B. Ren. *Promoter-proximal CTCF-binding Promotes Long-range-enhancer Dependent Gene Activation.* **Nature Struct. Mol. Bio.** 28, 152 (2021).

150 L. Cinque, L. Micale, E. Manara, A. Esposito, O. Palumbo, A.M. Chiariello, S. Bianco, G. Guerri, M. Bertelli, M.G. Giuffrida, L. Bernardini, A. Notarangelo, M. Nicodemi, M. Castori. *A novel complex genomic rearrangement affecting the KCNJ2 regulatory region causes a variant of Cooks syndrome.* Human Genetics doi.org/10.1007/s00439-021-02403-y (2021).

149 M. Nicodemi and S. Bianco. *Chromosomes Phase Transition to Function.* **Biophysical Jour.** 119, 724 (2020). New & Notable invited article.

148 I. Salamon, S. Serio, S. Bianco, C. Pagiatakis, S. Crasto, A.M. Chiariello, M. Conte, P. Cattaneo, L. Fiorillo, A. Felicetta, E. di Pasquale, P. Kunderfranco, M. Nicodemi, R. Papait, G. Condorelli. *Divergent transcription of the Nkx2-5 locus generates two enhancer RNAs with opposing functions.* **iScience** 101539 (2020).

147 M. Conte, L. Fiorillo, S. Bianco, A.M. Chiariello, A. Esposito, M. Nicodemi, *Polymer physics indicates chromatin folding variability across single-cells results from state degeneracy in phase-separation*. **Nature Com.** 11, 3289 (2020).

146 S. Bianco, A.M. Chiariello, M. Conte, A. Esposito, L. Fiorillo, F. Musella, M. Nicodemi. *Computational Approaches from Polymer Physics to Investigate Chromatin Folding.* **Current Opinion in Cell Biology** 64, 10 (2020).

145 A.M. Chiariello, S. Bianco, A.M. Oudelaar, C. Annunziatella, A. Esposito, L. Fiorillo, M. Conte, A. Corrado, A. Prisco, M.S.C. Larke, J.M. Telenius, R. Sciarretta, F. Musella, V. Buckle, D.R. Higgs, J. Hughes, M. Nicodemi. *A dynamic folded hairpin conformation is associated with α-globin activation in erythroid cells.* **Cell Reports** 30, 2125 (2020).

144 G.I. Dellino, F. Palluzzi, R. Piccioni, A.M. Chiariello, S. Bianco, L. Furia, G. De Conti, B. Bouwman, G. Melloni, D. Guido, L. Giacò, L. Luzi, D. Cittaro, M.Faretta, M. Nicodemi, N. Crosetto and P.G. Pelicci, *Release of stalled RNA-Polymerase II at specific loci and chromatin domains favors spontaneous DNA double strand breaks formation and predicts cancer translocations*. **Nature Gen.** 51, 1011 (2019).

143 S. Bianco, C. Annunziatella, G. Andrey, A.M. Chiariello, A. Esposito, L. Fiorillo, A. Prisco, M. Conte, R. Campanile, M. Nicodemi, *Modeling Single-Molecule Conformations of the HoxD Region in Mouse Embryonic Stem and Cortical Neuronal Cells*. **Cell Reports** 28, 1574 (2019).

142 C. Paliou, P. Guckelberger, R. Schöpflin, V. Heinrich, A. Esposito, A. M. Chiariello, S. Bianco, C. Annunziatella, N. Brieske, J. Helmuth, S. Haas, I. Jerković, L. Wittler, B. Timmermann, M. Nicodemi, M. Vingron, S. Mundlos and G. Andrey, *Preformed Chromatin Topology Assists Transcriptional Robustness of Shh during Limb Development*, **P.N.A.S.** U.S.A. 116, 12390 (2019).

141 S. Bianco, L. Fiorillo, A.M. Chiariello, M. Barbieri, A. Esposito, C. Annunziatella, M. Conte, A. Corrado, A. Prisco, A. Pombo, M. Nicodemi, *Inference of chromosome 3D structures from GAM data by a physics computational approach*. Methods, in press (2019).

140 A. Esposito, C. Annunziatella, S. Bianco, A.M. Chiariello, L. Fiorillo, M. Nicodemi, *Models of polymer physics for the architecture of the cell nucleus*, WIREs Syst. Biol. Med., e1444 (2018).

139 B.K. Kragesteen, M. Spielmann, C. Paliou, V. Heinrich, R. Schoepflin, A. Esposito, C. Annunziatella, S. Bianco, A.M. Chiariello, I. Jerković, I. Harabula, P. Guckelberger, M. Pechstein, L. Wittler, W.-L. Chan, M. Franke, D.G. Lupiáñez, K. Kraft, B. Timmermann, M. Vingron, A. Visel, M. Nicodemi*, S. Mundlos* and G. Andrey*, *Dynamic 3D Chromatin Architecture Determines Enhancer Specificity and Morphogenetic Identity in Limb Development*. **Nature Gen.** 50, 1463 (2018). (* joint last author)

138 A.M. Oudelaar, J.O.J. Davies, L.P. Hanssen, J.M. Telenius, R. Schwessinger, Y. Liu, J.M. Brown, D.J. Downes, A.M. Chiariello, S. Bianco, M. Nicodemi, V.J. Buckle, J. Dekker, D.R. Higgs, J.R. Hughes, *Single-allele chromatin interactions reveal regulatory hubs in dynamic compartmentalized domains*. **Nature Gen.** 50, 1744 (2018).

137 S. Bianco, D.G. Lupiáñez, A.M. Chiariello, C. Annunziatella, K. Kraft, R. Schöpflin, L. Wittler, G. Andrey, M. Vingron, A. Pombo, S. Mundlos, M. Nicodemi, *Polymer Physics Predicts the Effects of Structural Variants on Chromatin Architecture*. **Nature Gen.** 50, 662 (2018).

136 M. Marti-Renom, et al.*, *Challenges and guidelines towards 4D nucleome data and model standards*. **Nature Gen.**, 50, 1352 (2018). (*members of the 4DN EU consortium)

135 C. Annunziatella, A.M. Chiariello, A. Esposito, S. Bianco, L. Fiorillo, M. Nicodemi, *Molecular Dynamics simulations of the Strings and Binders Switch Model of chromatin*, **Methods** 142, 81 (2018).

134 C.A. Brackley, J. Johnson, D. Michieletto, A.N. Morozov, M. Nicodemi, P.R. Cook, D. Marenduzzo, ``*Extrusion without a motor: a new take on the loop extrusion model of genome organization*". **Nucleus** 9, 95 (2018).

133 A.M. Chiariello, S. Bianco, C. Annunziatella, A. Esposito, M. Nicodemi, *The scaling features of the 3D organization of chromosomes are highlighted by a transformation à la Kadanoff of Hi-C data*. **Europhys. Lett.**, 120, 40004 (2017).

132 J. Dekker, et al.*, *The 4D nucleome project*. **Nature** 549, 219 (2017). (*members of the 4DN consortium)

131 S. Sarnataro, A.M. Chiariello, A. Esposito, A. Prisco, M. Nicodemi, *Structure of the human chromosome interaction network".* PLoS One 12, e0188201 (2017).

130 A.M. Chiariello, A. Esposito, C. Annunziatella, S. Bianco, L. Fiorillo, A. Prisco, M. Nicodemi, *"A polymer physics investigation of the architecture of the murine orthologue of the 7q11.23 human locus"*, Frontiers in Neuroscience 11, 559 (2017).

129 C. Ferrai, E. Torlai Triglia, J.R. Risner-Janiczek, T. Rito, I. de Santiago, A. Kukalev, O.J.L. Rackham, M. Nicodemi, A. Akalin, M. Li, M.A. Ungless, A. Pombo, ``RNA polymerase II primes Polycomb-repressed developmental genes throughout terminal neuronal differentiation". **Molecular System Biology** 13, 946 (2017).

128 C.A. Brackley, J. Johnson, D. Michieletto, A.N. Morozov, M. Nicodemi, P.R. Cook, D. Marenduzzo, ``Non-equilibrium chromosome looping via molecular slip-links". **Phys. Rev. Lett.** 119, 138101 (2017).

127 M. Barbieri, S.Q. Xie, E. Torlai Triglia, A.M. Chiariello, S. Bianco, I. de Santiago, M.R. Branco, D. Rueda, M. Nicodemi*, A. Pombo*, *Active and poised promoter states drive folding of the extended HoxB locus in mouse embryonic stem cells*. **Nature Struct. Mol. Bio**, 24, 515 (2017). (* joint last author)

126 R.A. Beagrie, A. Scialdone, M. Schueler, D.C.A. Kraemer, M. Chotalia, S.Q. Xie, M. Barbieri, I. de Santiago, L.-M. Lavitas, M.R. Branco, J. Fraser, J. Dostie, L. Game, N. Dillon, P.A.W. Edwards, M. Nicodemi*, A. Pombo*, *Complex multi-enhancer contacts captured by Genome Architecture Mapping (GAM), a novel ligation-free approach*. **Nature** 543, 519 (2017). (* joint last author)

125 S. Bianco, A.M. Chiariello, C. Annunziatella, A. Esposito, M. Nicodemi, *"Predicting chromatin architecture from models of polymer physics"*, Chromosome Res., doi:10.1007/s10577-016-9545-5 (2017).

124 C. Annunziatella, A.M. Chiariello, S. Bianco, M. Nicodemi, *"Polymer models of the hierarchical folding of the HoxB chromosomal locus"*, Phys. Rev. E 94, 042402 (2016).

123 A.M. Chiariello, S. Bianco, C. Annunziatella, A. Esposito, M. Nicodemi, *"Polymer physics of chromosome large-scale 3D organisation", Nature* **Scientific Reports** 6, 29775 (2016).

122 V. Proserpio, A. Piccolo, L. Haim-Vilmovsky, G. Kar, T. Lönnberg, V. Svensson, J. Pramanik, K. Natarajan, W. Zhai, X. Zhang, G. Donati, M. Kayikci, J. Kotar, A.N. Mckenzie, R. Montandon, O. Billker, S. Woodhouse, P. Cicuta, M. Nicodemi*, S.A. Teichmann*. Single-cell analysis of CD4+ T-cell differentiation reveals three major cell states and progressive acceleration of proliferation. **Genome Biology** *17***,** 103 (2016). (* joint last author)

121 J. Fraser, C. Ferrai, A.M. Chiariello, M. Schueler, T. Rito, G. Laudanno, M. Barbieri, B.L. Moore, D.C.A. Kraemer, S. Aitken, S.Q. Xie, K. Morris, M. Itoh, H. Kawaji, I. Jaeger, Y. Hayashizaki, P. Carninci, A.R.R. Forrest, FANTOM Consortium, C.A. Semple, J. Dostie, A. Pombo, and M. Nicodemi. Hierarchical folding of chromosomes is linked to transcriptional changes in cellular differentiation. **Molecular System Biology** *11, 852 (2015).*

120 A. M. Chiariello, S. Bianco, A. Piccolo, C. Annunziatella, M. Barbieri, A. Pombo and M. Nicodemi, "Polymer models of the organization of chromosomes in the nucleus of cells", Mod. Phys. Letters B 29, 1530003 (2015).

119 M. Zamparo, F. Chianale, C. Tebaldi, M. Cosentino Lagomarsino, M. Nicodemi, A. Gamba, "Dynamic membrane patterning, signal localization and polarity in living cells", Soft Matter 11, 838 (2015).

118 J.W. Armond, K. Saha, A. Rana, C. Oates, R. Jaenisch, M. Nicodemi, S. Mukherjee, “A stochastic model dissects cell states in biological transition”, *Nature* **Scientific Reports** 4, 3692 (2014).

117 A. Pombo, M. Nicodemi, “Models of chromosome structure”, Current Opinion in Cell Biology 28, 90 (2014).

116 A. Pombo, M. Nicodemi, “Physical mechanisms behind the large scale features of chromatin organization”, Transcription 5, e28447 (2014).

115 F.P. Casale, G. Giurato, G. Nassa, J.W. Armond, C.J. Oates, D. Cora´, A. Gamba, S. Mukherjee, A. Weisz, M. Nicodemi, “Single-Cell States in the Estrogen Response of Breast Cancer Cell Lines”, PLoS One 9, e88485 (2014).

114 M. Barbieri, A. Scialdone, A. Gamba, A. Pombo, M. Nicodemi, “Polymer physics, scaling and heterogeneity in the spatial organisation of chromosomes in the cel nucleus”, Soft Matter 9, 8631 (2013). (Invited review)

113 M. Barbieri, M. Chotalia, J. Fraser, L.-M. Lavitas, J. Dostie, A. Pombo, M. Nicodemi, “A polymer model ex- plains the complexity of large-scale chromatin folding”, Nucleus 4; 4, 1-7 (2013). (Journal cover feature July/Aug. 2013)

112 M. Barbieri, A. Scialdone, A. Piccolo, A.M. Chiariello, C. di Lanno, A. Prisco, A. Pombo, M. Nicodemi, “Polymer models of chromatin organization”, Frontiers in Genetics: System Biology 4, 113 (2013).

111 M. Barbieri, M. Chotalia, J. Fraser, L.-M. Lavitas, J. Dostie, A. Pombo, M. Nicodemi, “A model of the large scale organization of chromatin”, Biochemical Society Transactions 41, 508 (2013).

110 M. Barbieri, M. Chotalia, J. Fraser, L.-M. Lavitas, J. Dostie, A. Pombo, M. Nicodemi, “Complexity of chromatin folding is captured by the Strings & Binders Switch model”, **P.N.A.S.** U.S.A. 109, 16173 (2012).

109 A. Gamba, M. Nicodemi, J. Soriano, A. Ott, “Critical Behavior and Axis defining Symmetry Breaking in Hydra embryonic Development”, **Phys. Rev. Lett.** 108, 158103 (2012).

108 V. Bianco, A. Scialdone, M. Nicodemi, “Colocalization of Multiple DNA Loci: a Physical Mechanism”, Biophys. Jour. 103, 2223-2232 (2012).

107 .Bureau,S.Brand,R.C.Ball,M.Nicodemi,“Flow regimes of a fluid driven granular suspension”, Granular Matter 14, 175 (2012).

106 A. Scialdone, M. Barbieri, D. Pallotti, M. Nicodemi, “Mean-Field Theory of the Symmetry Breaking Model for X Chromosome Inactivation”, Prog. Theor. Phys. Sup. 191, 40 (2011).

105 A. Scialdone, I. Cataudella, M. Barbieri, M. Nicodemi, “Conformation Regulation of the X Chromosome Inactivation Center: a Model”, PLoS Comp. Bio. 7, e1002229 (2011).

104 M. Pica Ciamarra, R. Pastore, M. Nicodemi, A. Coniglio, “Jamming phase diagram for frictional particles”, Phys. Rev. E 84, 041308 (2011).

103 S. Brand, R.C. Ball, M. Nicodemi, “Stochastic transitions and jamming in granular pipe flow”, Phys. Rev. E 83, 031309 (2011).

102 A. Scialdone, M. Nicodemi, “Diffusion based DNA-target Colocalization by Thermodynamic Mechanisms”, Development 137, 3877 (2010).

101 A. Scialdone, M. Nicodemi, “Passive DNA shuttling”, Europhys. Lett. 92, 20002 (2010).

100 M. Pica Ciamarra, M. Nicodemi, A. Coniglio, “Recent results on the jamming phase diagram”, Soft Matter 6, 2871 (2010).

99 A. Scialdone, M. Nicodemi, “Statistical Mechanics models for X-Chromosome Inactivation”, Advances In Complex Systems 13, 367 (2010).

98 S. Brand, M. Pica Ciamarra, M. Nicodemi, “Complex flow in granular media”, Advances In Complex Systems 13, 339 (2010).

97 R. Amato, M. Pinelli, D. D’Andrea, G. Miele, M. Nicodemi, G. Raiconi, and S. Cocozza, “A novel approach to simulate gene-environment interactions in complex diseases”, BMC-Bioinformatics 11, 8 (2010).

96 M. Nicodemi, M. Pica Ciamarra, A. Coniglio, “Rheology of sheared monodisperse granular suspensions”, Eur.Phys.Jour. Special Topics 179, 157 (2009).

95 E. Piegari, V. Cataudella, R. Di Maio, L. Milano, M. Nicodemi, and M.G. Soldovieri, “Electrical resistivity tomography and statistical analysis in landslide modelling: A conceptual approach”, Jour. of Applied Geophys. 68, 151 (2009).

94 M. Nicodemi, A. de Candia, A. Coniglio, “Aggregation of fibrils and plaques in amyloid molecular systems”, Phys. Rev. E 80, 041914 (2009).

93 A. Scialdone and M. Nicodemi, “DNA loci cross-talk through thermodynamics”, Journal of Biomedicine and Biotechnology, 516723 (2009)

92 A. Veglio, A. Gamba, M. Nicodemi, F. Bussolino, G. Serini, “A symmetry breaking mechanism for epithelial cell polarization” Phys. Rev. E 80, 031919 (2009).

91 M. Nicodemi and A. Prisco, “Thermodynamic pathways to genome spatial organization in the cell nucleus”, Biophys. Jour. 96, 2168 (2009).

90 A.Scialdone and M.Nicodemi,“Mechanics and dynamics of X-chromosome pairing at X inactivation”, PLoS Comp. Bio. 5, e10002444 (2008).

89 M. Nicodemi, B. Panning, A. Prisco, “Colocalization transition of homologous chromosomes at meiosis”, Phys. Rev. E 77, 061913 (2008).

88 D.S. Grebenkov, M. Pica Ciamarra, M. Nicodemi, and A. Coniglio, “Flow, ordering, and jamming of sheared granular suspensions”, **Phys. Rev. Lett.** 100, 078001 (2008).

87 M. Nicodemi, B. Panning, A. Prisco, “A thermodynamic switch for chromosome colocalization”, Genetics 179, 717 (2008).

86 E. Piegari, V. Cataudella, R. Di Maio, L. Milano, M. Nicodemi, and R. Scandone, “A model of volcanic magma transport by fracturing stress mechanisms”, Geophys. Res. Lett. 35, L06308 (2008).

85 L.deArcangelis,E.Lippiello,C.Godano,M.Nicodemi,“Statistical properties and universality in earthquake and solar flare occurrence”, Eur. Phys. J. B 64, 551 (2008).

84 M. Nicodemi and A. Prisco, “Self-assembly and DNA binding of the blocking factor in X Chromosome Inactivation”, PLoS Comp. Bio. 3, e210 (2007).

83 M.PicaCiamarra, D.deMartino, A.Coniglio, and M.Nicodemi, “Shear and vibration induced order/disorder transitions in granular media”, Eur. Phys. J. E 24, 411 (2007).

82 M. Nicodemi and A. Prisco, “A Symmetry Breaking Model for X Chromosome Inactivation”, **Phys. Rev. Lett.** 98, 108104 (2007).

81 M. Pica Ciamarra, A. Coniglio, and M. Nicodemi, “Granular packs under vertical tapping: Structure evolution, grain motion, and dynamical heterogeneities”, Phys. Rev. E 75, 021303 (2007).

80 M. Pica Ciamarra, A. Coniglio, and M. Nicodemi, “Phenomenology and theory of horizontally oscillated granular mixtures”, Eur. Phys. J. E 22, 227 (2007).

79 P. D’Angelo, M. Barra, M. Nicodemi, A. Cassinese, “Phase transitions and aging phenomena in dielectric-like polymeric materials investigated by ac measurements”, Jour. Appl. Phys. 101, 044910 (2007).

78 M. Pica Ciamarra, A. Coniglio, and M. Nicodemi, “Thermodynamics and Statistical Mechanics of Dense Granular Media”, **Phys. Rev. Lett.** 97, 158001 (2006).

77 M. Pica Ciamarra, A. Coniglio, and M. Nicodemi, “Dynamically induced effective interaction in periodically driven granular mixtures”, **Phys. Rev. Lett.** 97, 038001 (2006).

76 M. Pica Ciamarra, M.D. De Vizia, A. Fierro, M. Tarzia, A. Coniglio, M. Nicodemi, “Granular Species Segregation under Vertical Tapping: Effects of Size, Density, Friction, and Shaking Amplitude”, **Phys. Rev. Lett.** 96, 058001 (2006).

75 L. de Arcangelis, C. Godano, E. Lippiello, M. Nicodemi, “Universality in solar flare and earthquake occurrence”, **Phys. Rev. Lett.** 96, 051102 (2006).

74 E. Piegari, V. Cataudella, R. Di Maio, L. Milano, and M. Nicodemi, “A cellular automaton for the factor of safety field in landslides modeling” Geophys. Res. Lett. 33, L01403 (2006).

73 A. Borrelli, I. De Falco, A. Della Cioppa, M. Nicodemi, G. Trautteur, “Performance of Genetic Programming to extract the trend in noisy data series”, Physica A 370, 104 (2006).

72 E. Piegari, V. Cataudella, R. Di Maio, L. Milano, and M. Nicodemi, “Finite driving rate and anisotropy effects in a model for landslides”, Phys. Rev. E 73, 026123 (2006).

71 M. Tarzia, A. Fierro, M. Nicodemi, M. Pica Ciamarra, A. Coniglio, “Size segregation in granular media induced by phase transition”, **Phys. Rev. Lett.** 95, 078001 (2005).

70 A. Fierro, M. Nicodemi, M. Tarzia, A. de Candia, and A. Coniglio, “Jamming transition in granular media: A mean-field approximation and numerical simulations”, Phys. Rev. E 71, 061305 (2005).

69 M. Pica Ciamarra, A. Coniglio, and M. Nicodemi, “Shear-induced segregation of a granular mixture under horizontal oscillation”, Jour. Phys.: Cond. Matt. 17, S2549 (2005).

68 A. Coniglio, A. Fierro, M. Nicodemi, M. Pica Ciamarra and M. Tarzia, “Statistical mechanics of dense granular media”, Jour. Phys.: Cond. Matt. 17, S2557 (2005).

67 M. Pica Ciamarra, A. Coniglio, and M. Nicodemi, “Shear instabilities in granular mixtures”, **Phys. Rev. Lett.** 94, 188001 (2005).

66 L.P. Oliveira, H.J. Jensen, M. Nicodemi, and P. Sibani, “Record dynamics and the observed temperature plateau in the magnetic-creep rate of type-II superconductors”, Phys. Rev. B 71, 104526 (2005).

65 P. Richard, M. Nicodemi, R. Delannay, P. Ribi`ere, D. Bideau, “Slow relaxation and compaction of granular systems”, **Nature** *Materials* 4, 121 (2005).

64 A. Caiazzo, A. Coniglio, and M. Nicodemi, “Glass glass transition and new dynamical singularity points in an analytically solvable p-spin glass like model”, **Phys. Rev. Lett.** 93, 215701 (2004).

63 A.Coniglio, A.deCandia, A.Fierro, M.Nicodemi, M.Tarzia, “Statistical mechanics approach to the jamming transition in granular materials”, Physica A 344, 431 (2004).

62 M. Tarzia, A. Fierro, M. Nicodemi, A. Coniglio, “Segregation in fluidized versus tapped packs”, **Phys. Rev. Lett.** 93, 198002 (2004).

61 M. Nicodemi and H.J. Jensen, “Time dependent phenomena in transport properties and I-V characteristics of a model for driven vortex matter” Jour. Phys.: Cond. Matt. 16, 6789 (2004).

60 M. Tarzia, A. de Candia, A. Fierro, M. Nicodemi, A. Coniglio, “Glass transition in granular media”, Europhys. Lett. 66, 531 (2004).

59 A. Coniglio, A. de Candia, A. Fierro, M. Nicodemi, M. Pica Ciamarra, M. Tarzia, “On Edwards’ theory of powders”, Physica A 339, 1 (2004).

58 A. Coniglio, A. Fierro, M. Nicodemi, “Stationary Probability Distribution in Granular Media”, Physica D 193, 292 (2004).

57 A. Caiazzo, A. Coniglio, and M. Nicodemi, “Phase coexistence and relaxation of the spherical frustrated Blume-Emery-Griffiths model with attractive particles coupling”, Europhys. Lett. 65, 256 (2004).

56 M. Nicodemi, “The Peak Effect in a driven lattice gas model”, Phys. Rev. E 67, 041103 (2003).

55 A. Fierro, M. Nicodemi, and A. Coniglio, “Edwards’ approach to horizontal and vertical segregation in a mixture of hard spheres under gravity”, Jour. Phys.: Cond. Matt. 15, 1095 (2003).

54 A. Fierro, M. Nicodemi and A. Coniglio, “Thermodynamic and Statistical Mechanics of frozen systems in inherent states”, Phys. Rev. E 66, 061301 (2002).

53 S.T.Bramwell,K.Christensen,J.Y.Fortin,P.C.W.Holdsworth,H.J.Jensen,S.Lise,J.Lopez,M.Nicodemi, J.-F. Pinton, M. Sellitto, “Universal Fluctuations in Correlated Systems” - Reply, **Phys. Rev. Lett.** 89, 208902 (2002).

52 M. Nicodemi, A. Fierro and A. Coniglio, “Segregation in hard spheres mixtures under gravity. An extension of Edwards approach with two thermodynamical parameters”, Europhys. Lett. 60, 684 (2002).

51 A. Caiazzo, A. Coniglio, and M. Nicodemi, “Dynamics and thermodynamics of the spherical frustrated Blume-Emery-Griffiths model”, Phys. Rev. E 66, 046101 (2002).

50 M. Nicodemi and H.J. Jensen, “Equilibrium and off-equilibrium dynamics in a model for vortices in superconductors”, Phys. Rev. B 65, 144517 (2002).

49 A. Coniglio, A. Fierro, M. Nicodemi, “Probability distribution of inherent states in models of granular media and glasses”, Europ. Jour. Phys. E 9, 219 (2002).

48 D.Hamon,M.NicodemiandH.J.Jensen,“Continuously driven OFC: a simple model of Solar flare statistics”, Astronomy&Astrophysics 387, 326 (2002).

47 A.Fierro,M.Nicodemi,andA.Coniglio,“Equilibrium Distribution of the Inherent States and their Dynamics in Glassy Systems and Granular Media”, Europhys. Lett. 59, 642 (2002).

46 H.J. Jensen and M. Nicodemi, “Memory effects in response functions of driven vortex matter”, Europhys. Lett. 57, 348 (2002).

45 M. Nicodemi and H.J. Jensen, “Nature of temperature independent dissipation and relaxation in layered superconductors” - Reply, **Phys. Rev. Lett.** 87, 259702 (2001).

44 A.Coniglio,A.Fierro,M.Nicodemi,“Applications of the Statistical Mechanics of Inherent States to Granular Media”, Physica A 302, 193 (2001).

43 M. Nicodemi, “Interplay of dynamical and equilibrium phenomena in vortex matter”, J. Phys.: Cond. Matt. 14, 2403 (2002).

42 S.T.Bramwell,K.Christensen, J.-Y.Fortin, P.C.W.Holdsworth,H.J.Jensen, S.Lise,J.Lopez, M.Nicodemi, J.-F. Pinton, M. Sellitto, “Universal Fluctuations in Correlated Systems” - Reply, **Phys. Rev. Lett.** 87, 188902 (2001).

41 M.Nicodemi and H.J.Jensen,“Aging and memory phenomena in magnetic and transport properties of vortex matter”, J. Phys. A 34, 8425 (2001).

40 H.J. Jensen and M. Nicodemi, “Off equilibrium properties of vortex creep in superconductors”, Europhys. Lett. 54, 566 (2001).

39 M. Nicodemi and H.J. Jensen, “Creep of superconducting vortices in the limit of vanishing temperature: A fingerprint of off-equilibrium dynamics”, **Phys. Rev. Lett.** 86, 4378 (2001).

38 A. Coniglio and M. Nicodemi, “A Statistical Mechanics Approach to the Inherent States of Granular Media”, Physica A 296, 451 (2001).

37 M. Nicodemi, “Vortex matter out of equilibrium”, Fractals 11, 149 (2003).

36 M. Nicodemi and H.J. Jensen, “Off equilibrium magnetic properties in a model of repulsive particles for vortices in superconductors”, J. Phys. A 34, L11 (2001).

35 F. Corberi, M. Nicodemi, M. Piccioni, A. Coniglio, “Slow dynamics and aging in a constrained diffusion model”, Phys. Rev. E 63, 031106 (2001).

34 D.K. Jackson, M. Nicodemi, G. Perkins, N. Lindop, H.J. Jensen, “Vortex Clustering: The Origin of the Second Peak in the Magnetisation Loops of Type Two Superconductors”, Europhys. Lett. 52, 210 (2000).

33 M. Nicodemi and H.J. Jensen, “Second magnetisation peak relaxation in a model for vortices in superconductors”, Physica C 341-348, 1065 (2000).

32 M.Nicodemi,“Domains growth and packing properties in driven granular media subject to gravity”,Physica A 285, 267 (2000).

31 S.T.Bramwell,K.Christensen,J.Y.Fortin,P.C.W.Holdsworth,H.J.Jensen,S.Lise, J.Lopez, M.Nicodemi, J.-F. Pinton, M. Sellitto, “Universal Fluctuations in Correlated Systems”, **Phys. Rev. Lett.** 84, 3744 (2000).

30 A. Coniglio and M. Nicodemi, “The jamming transition of Granular Media”, Jour. Phys.: Cond. Matt. 12, 6601 (2000).

29 F. Corberi, M. Nicodemi, M. Piccioni, A. Coniglio, “Off-equilibrium dynamics in a singular diffusion model”, **Phys. Rev. Lett.** 83, 5054 (1999).

28 M. Nicodemi, “Dynamical response functions in models of vibrated granular media”, **Phys. Rev. Lett.** 82, 3734 (1999).

27 M. Nicodemi, A. Coniglio, H.J. Herrmann, “Density fluctuations in a model for vibrated granular media”, Phys. Rev. E 59, 6830 (1999).

26 A. Coniglio, E. Caglioti, H.J. Herrmann, V. Loreto, M. Nicodemi, “Cooperative Length and Free-Volume Approach for Granular Media”, Physica A 265, 311 (1999).

25 A. Coniglio and M. Nicodemi, “Scaling properties in off equilibrium dynamical processes”, Phys. Rev. E 59, 2812 (1999).

24 M. Nicodemi and A. Coniglio, “Aging in out of equilibrium dynamics of models for granular media”, **Phys. Rev. Lett.** 82, 916 (1999).

23 M.Piccioni,M.Nicodemi,S.Galam,“Logarithmic relaxations in a random-field lattice gas subject to gravity”, Phys. Rev. E 59, 3858 (1999).

22 A. Coniglio, A. de Candia, A. Fierro, M. Nicodemi, “Universality in glassy systems”, Jour. Phys.: Cond. Mat. 11, A167 (1999).

21 H.J. Herrmann, S. Krishnamurthy, V. Loreto, M. Nicodemi, S. Roux, “Internal avalanches in models of granular media”, Fractals 7, 51 (1999).

20 M. Nicodemi, “Force correlations and arches formation in granular assemblies”, **Phys. Rev. Lett.** 80, 1340 (1998).

19 A. Coniglio, E. Caglioti, H.J. Herrmann, V. Loreto, M. Nicodemi, “Segregation of granular mixtures in presence of compaction”, Europhys. Lett. 43, 591 (1998).

18 A. Coniglio, A. de Candia, M. Nicodemi, “Frustration in glass forming liquids and the breakdown of Stokes-Einstein relations”, Il Nuovo Cimento 20D, 2349 (1998).

17 A. Coniglio, E. Caglioti, H.J. Herrmann, V. Loreto, M. Nicodemi, “Geometrical Frustration: a dynamical motor for dry granular media”, Physica A 257, 419 (1998).

16 M. Nicodemi, “A phenomenological theory of dynamic processes in granular media”, Physica A, 257, 448 (1998).

15 M. Nicodemi, “Logarithmic compaction in a 3D model for granular media”, Jour. de Phys. I 7, 1573 (1997).

14 J. Arenzon, M. Nicodemi and M. Sellitto, “The Blume-Emery-Griffiths Spin Glass Model”, Jour. de Phys. I 7, 945 (1997).

13 E.Caglioti,H.J.Herrmann,V.Loreto,M.Nicodemi,“ATetris-like Model for the Compaction of Dry Granular Media”, **Phys. Rev. Lett.** 79, 1575 (1997).

12 M. Nicodemi and A. Coniglio, “Macroscopic glassy relaxations and microscopic motions in a Frustrated Lattice Gas”, Phys. Rev. E 57, R39 (1998).

11 M. Nicodemi and A. Coniglio, “The glassy transition of the frustrated Ising lattice gas”, J. Phys. A 30, L187 (1997).

10 M. Nicodemi, “Percolation and cluster formalism in continuous spin systems”, Physica A 238, 9 (1997).

9 M. Nicodemi, A. Coniglio, H.J. Herrmann, “Frustration and slow dynamics of granular packings”, Phys.Rev. E 55, 3962 (1997).

8 M. Nicodemi, A. Coniglio, H.J. Herrmann, “Compaction and force propagation in granular packings”, Physica A 240, 405 (1997).

7 M. Nicodemi, A. Coniglio, H.J. Herrmann, “The compaction in granular media and frustrated Ising models”, J. Phys. A 30, L379 (1997).

6 J. Arenzon, M. Nicodemi and M. Sellitto, “Equilibrium properties of the Ising frustrated lattice gas”, Jour. de Phys. I 6, 1143 (1996).

5 V. Cataudella and M. Nicodemi, “Efficient Cluster Dynamics for the Fully Frustrated XY Model”, Physica A 233, 293 (1996).

4 V. Cataudella, G. Franzese, M. Nicodemi, A. Scala and A. Coniglio, “Percolation and cluster Monte Carlo dynamics for spin models”, Phys. Rev. E 54, 175 (1996).

3 M. Nicodemi, “Mapping of frustrated spin systems into percolation models and Monte Carlo cluster dynamics”, Jour. of Phys. A, 29, 1961 (1996).

2 V. Cataudella, G. Franzese, M. Nicodemi, A. Scala, A. Coniglio, “Generalised percolation models and frustrated spin systems”, Il Nuovo Cimento D 16, 1259 (1994).

1 V. Cataudella, G. Franzese, M. Nicodemi, A. Scala, A. Coniglio, “Critical Clusters and Efficient Dynamics for Frustrated Spin Models”, **Phys. Rev. Lett.** 72, 1541 (1994).