

Curriculum Vitae

Leonardo E. Silbert

Date of Birth: 14th May, 1971
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Place of Birth: Norwich, U. K.
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EMPLOYMENT

Department of Chemistry and Biochemistry, University of California, Los Angeles & James Franck Institute, University of Chicago (started July, 2002) - Research associate studying jamming transitions in dense particle systems and issues related to glassy dynamics and the glass transition. Utilization of computer modelling to probe the statistical mechanical properties of materials around the jammed state.

Sandia National Laboratories (1999 - 2002) - Basic Energy Sciences funded post-doctoral research associate studying fundamental aspects of granular media through the development of unique computational tools applicable to granular materials: a macroscopic and microstructural characterisation of dynamic processes and static systems.

Cavendish Laboratory, University of Cambridge (1998) - Polymers and Colloids Group post-doctoral researcher on computer simulations of concentrated colloidal systems.

EDUCATION

Cavendish Laboratory, University of Cambridge (1994-1998) Ph.D - *Concentrated and aggregated colloids under flow: a simulation study.* A full characterisation and determination of the rheology of mono-disperse spheres in shear flow. A qualification of microstructural issues that determine the rheology of such systems, including the elucidation of stress-bearing structures that appear to control the flow properties.

Department of Applied Mathematics and Theoretical Physics, University of Cambridge (1993-1994) Certificate of Advanced Study in Mathematics - Taught course including topics ranging from gravitational physics through to quantum field theories. Pass with merit.

Schuster Laboratory, University of Manchester (1990-1993) BSc. - honours degree in physics (2:1).

Publications

The properties of Jamming at Zero Temperature L. E. Silbert, C. S. O'Hern, A. J. Liu, and S. R. Nagel, *Unifying concepts in granular media and glasses: Workshop Proceedings* (To be published 2004).

Jamming at Zero Temperature and Zero Applied Stress: the Epitome of Disorder C. S. O'Hern, L. E. Silbert, A. J. Liu, and S. R. Nagel, *Phys. Rev. E* **68**, 011306 (2003).

Confined granular packings: structure, stress, and force J. W. Landry, G. S. Grest, L. E. Silbert, and S. J. Plimpton, *Phys. Rev. E* **67**, 041303 (2003).

Granular flow down a rough inclined plane: Transition between thin and thick piles L. E. Silbert, J. W. Landry, and G. S. Grest, *Phys. Fluids* **15**, 1 (2003).

Statistics of the contact network in frictional and frictionless packings L. E. Silbert, G. S. Grest, and J. W. Landry, *Phys. Rev. E* **66**, 061303 (2002).

Boundary effects and self-organization in dense granular flows L. E. Silbert, G. S. Grest, D. Levine, and S. J. Plimpton, *Phys. Fluids* **14**, 2637 (2002).

Analogies between Granular jamming and liquid glass transitions L. E. Silbert, D. Ertaş, G. S. Grest, T. C. Halsey, and D. Levine, *Phys. Rev. E* **65**, 051307 (2002).

Rheology of dense granular flows T. C. Halsey, D. Ertaş, G. S. Grest, L. E. Silbert, and D. Levine, *Advances in Complex Systems* Vol. 4, pp. 419 (World Scientific Publishing Co. , New Jersey 2002).

Geometry of frictional and frictionless sphere packings L. E. Silbert, D. Ertaş, G. S. Grest, T. C. Halsey, and D. Levine, *Phys. Rev. E* **65**, 031304 (2002).

Granular flow down an inclined plane: Bagnold scaling and rheology L. E. Silbert, D. Ertaş, G. S. Grest, T. C. Halsey, D. Levine, and S. J. Plimpton, *Phys. Rev. E* **64**, 051302 (2001).

Gravity-driven dense granular flows D. Ertaş, G. S. Grest, T. C. Halsey, D. Levine, and L. E. Silbert, *Europhys. Lett.* **56**, 214 (2001).

Stress distributions in flowing aggregated colloidal suspensions L. E. Silbert, R. S. Farr, J. R. Melrose, and R. C. Ball, *J. Chem. Phys.* **111**, 4780 (1999).

A structural analysis of concentrated, aggregated colloids under flow L. E.

Silbert, J. R. Melrose, and R. C. Ball, *Mol. Phys.* **96**, 1667 (1999).

The rheology and microstructure of concentrated, aggregated colloids L. E. Silbert, J. R. Melrose, and R. C. Ball, *J. Rheo.* **43**, 673 (1999).

Shear induced structures in concentrated colloids J. R. Melrose, L. E. Silbert, R. S. Farr, and R. C. Ball 4th Meeting of the Royal-Society-Unilever-Indo-UK Forum in Materials Science and Engineering in *Structure and Dynamics of Materials in the Mesoscopic Domain*, ed. M. Lal, R. A. Mashelkar, B. D. Kulkarni, V. M. Naik (Imperial College Press, 1999).

The shear flow of concentrated colloids J. R. Melrose, J. H. van Vliet, L. E. Silbert, R. C. Ball, and R. S. Farr, in *Modern Aspects of Colloidal Dispersions*, ed. R. H. Ottewill and A. R. Rennie (Kluwer Academic Publishers, 1998).

Colloidal microdynamics: Pair-drag simulations of model, concentrated, aggregated systems L. E. Silbert, J. R. Melrose, and R. C. Ball, *Phys. Rev E* **56**, 7067 (1997).

Presentations

Jamming and the Properties of Amorphous Packings at Zero Temperature Invited oral presentation, APS March Meeting, Montreal (2004).

Characterisation of the Jamming Transition in Particle Systems Oral presentation at the APS March Meeting, Austin (2003).

Granular glass transition Oral presentation at the APS March Meeting, Indianapolis (2002).

Granular glass transition Oral presentation at the MRS Fall Conference, Boston (2001).

Granular materials: statics and dynamics Invited oral presentation at the *CCP5 workshop on Multiscale Algorithms for Simulation of Materials and Fluids*, Imperial College, London (2001).

Granular materials: statics and dynamics Oral presentation at the *Center for Non-Linear Studies, Los Alamos National Laboratory*, Los Alamos (2001).

Simulations of granular systems: statics and dense flows Oral Presentation at the *MRS Spring Conference*, San Francisco (2000).

The rheology of concentrated and aggregated colloids Oral presentation at the *Rheology Pacific Rim Conference*, Melbourne (1997).

Jamming and Glassy Dynamics Oral presentations at colloquia, University of Chicago 2002-3.

Granular Flows Oral presentations at colloquia, University of Chicago 2002-3.

Concentrated and aggregated colloids: a simulation study Several oral presentations at colloquia, University of Cambridge (1994-1997).

Concentrated and aggregated colloids: a simulation study Various poster presentations at complex fluids conferences (1994-1997).

Journal Referee

Europhysics Letters

International Journal of Solids and Structures.

Journal of Rheology

Physical Review E

Physical Review Letters

REFERENCES

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Extracurricular

- **Awards:**

Institute of Physics bursary to attend rheology conference in Australia, 1997.
Royal Society of Chemistry travel grant to attend rheology conference in Australia, 1997.

- **Teaching Experience:**

Stand-in lecturer for 1st year undergraduate Mathematics, Chicago, 2003.
Supervisions in Part I Quantum Physics, Cambridge, 1994-1995.
Supervisions in Part I Dynamics Physics, Cambridge, 1994-1995.
Examples Class Supervisor in Mathematical Physics, Cambridge, 1995-1996.

- Organiser of Computations in Science Seminar series, University of Chicago, Chicago (2002-2004).

- Organiser of seminar series for the Advanced Materials Laboratory, Sandia National Labs, Albuquerque (2000).

- Polymers & Colloids Group representative for schools visits (1994-1997).

- Treasurer for the Graduate Society of Trinity Hall, Cambridge (1995-1996).

- Sports player of; soccer (Albuquerque Soccer League, New Mexico, Trinity Hall, Cambridge Mens I and II teams), rowing (Graduate boat, Trinity Hall, Cambridge), cricket (Graduate team, Trinity Hall, Cambridge).