

EIRIK GRUDE FLEKKØY

born in Bærum, Norway 1963

Dr. Scient. (PhD) degree, University of Oslo 1993
Post-Doc, MIT, Cambridge 1994
Post-Doc, ESPCI, Paris 1995
Post-Doc, University of Oslo 1996
Associate professor, University of Oslo 1997
Research Scientist, University of Oslo 1998–2000
Research Scientist, Centre of Advanced Study, Oslo 2000-2001
Visiting professor, University of Honolulu 2004-2005
Professor of physics, University of Oslo 2001

Main activities:

My current activities are research leadership, teaching and communication. My research and teaching concerns petroleum related problems of physics/geophysics, in particular granular flows, two phase flow in porous media and hydrodynamics. The research is based on computer simulations and theory in collaboration with experimentalists. I teach one course on computer simulations in physics and one on statistical mechanics and hydrodynamics. Apart from Norwegian, I speak english and french. For play I enjoy time with my kids, as well as sailing, kiting, surfing and mountain climbing.

Publications and PR:

54 Scientific articles
The book *Sandslott og Flodbølger*, Eirik G. Flekkøy, Cappelen 2006
Chapter in *Naturens kode* Gyldendal 2005
Contributed in 1 national TV and 8 radio programs on science the last 2 years
In april 2007 I organized the art exhibition *Complexity in Nature* at the national library, showing pictures from research.

Administration and leadership:

Group leader of the AMKS group with 23 members 2007, a *Toppforskningsmiljø* at UiO since 2007.
Chairman and main organizer of two international conferences in Norway 2002 and 2004
President of the Condensed matter Physics section of the Norwegian Physical Society, 2001–2003
Co-organizer and co-funder of Complex, the largest physics collaboration in Norway
I am heading a 5 person group of phd students and postdocs my university
I have acted as an 'opponent' on 8 PhD committees the last 5 years.

External funds and resources:

I have since 1993 obtained various grants from the Norwegian Science Foundation (NFR), participated internationally on 2 EU proposals, carried out consulting for industry (Norsk Hydro), and attracted phd students and postdocs to my group from abroad (France, China, Serbia and Germany). Currently I am the project leader of a 7 MNOK grant from the NFR petroleum program Petromaks, and a co-leader of a 9 MNOK grant from the same program. I have a broad international network of scientists working in the field of petroleum physics/geology at various universities (NTNU, MIT, ESCPI Paris, Cambridge university and the universities of Strasbourg and Stuttgart to mention some) as well as Statoil.

Scientific articles

1. M. Ellero, P. Español and E. G. Flekkøy *Thermodynamically consistent model for viscoelastic flows* Phys. Rev. E **68**, 041504 (2003).
2. Eirik G. Flekkøy, S. McNamara, K. J. Måløy, J. Feder and G. Wagner *Hybrid modeles: Bridging particle and continuum scales in hydrodynamic flow simulations* Lect. Notes. **640**, 190–218 (2004).
3. *Interaction model for magnetic holes in a ferrofluid layer* R. Toussaint, J. Akslevold, G. Helgesen, A. Skjeltorp and Eirik G. Flekkøy Phys. Rev. E **69** 011407 (2004)
4. *Dynamic roughening and fluctuations of dipolar chains* R. Toussaint, G. Helgesen, A. Skjeltorp and E. G. Flekkøy Phys. Rev. Lett. **93** 108304 (2004)
5. *Self assembly and dynamics of magnetic holes* A. Skjeltorp, J. Akselvoll, K. De Lange Kristiansen, G. Helgesen, R. Toussaint, E.G. Flekkøy and J. Cernak in *Forces growth and form at the interface between physics and biology* Kluwer, Dordrecht, p. 165—179 (2004).
6. G. Wagner and E. G. Flekkøy *Hybrid computations with flux exchange*, Phil. Trans. R. Soc. Lond. A **362** p. 1–11 (2004).
7. *Interactions of magnetic holes in a ferrofluid layer* R. Toussaint, J. Akslevold, G. Helgesen, E. G. Flekkøy and A. Skjeltorp, Progress in Colloid and Polymer Science, **128**, p 151 (2004)
8. *Oscillatory shear flow in liquids via a hybrid continuum-particle scheme* R. Delgado-Buscalioni, E. G. Flekkøy and P. V. Coveney Europhys. Lett. **69** p.959 (2005)
9. E. G. Flekkøy, R. Delgado-Buscalioni and P. V. Coveney *Flux boundary conditions in particle simulations* Phys. Rev. E **72** 026703 (2005)

10. D.V. Anghel M. Strauss, S. McNamara, E.G Flekkøøy and K.J. Måløy Grains and gas flow: Molecular dynamics with hydrodynamic interactions (vol 61, pg 4054, 2000) Phys. Rev. E **74**, 029906 (2006)
11. D.V. Anghel M. Strauss, S. McNamara, E.G Flekkøøy and K.J. Måløy *Structure formation and instability in a tube of sand* Phys. Rev. Lett. (Vol. 87, p 134302, 2001) Phys. Rev. Lett. **97** 059902 (2006).
12. Ø. Johnsen, R. Toussaint, K.J. Måløy, and E.G. Flekkøøy *Pattern Formation During Air Injection Into Granular Materials Confined In A Circular Hele-Shaw Cell* Phys. Rev. E **74** 011301 (2006)
13. *Memory of fluctuating Brownian dipolar chains* R. Toussaint, E. G. Flekkøøy and G. Helgesen Phys. Rev. E **74** 051405 (2006)
14. *Granular Rayleigh-Taylor instability: experiment and simulation* J. L. Vinningland, Ø. Johnsen, E.G. Flekkøøy, R. Toussaint and K.J. Måløy, Phys. Rev. Lett. **99** 048001 (2007).
15. *Experiments and simulations of a gravitational granular flow instability.* J. L. Vinningland, Ø. Johnsen, E.G. Flekkøøy, R. Toussaint and K.J. Måløy, Phys. Rev. E **76** 051306 (2007).
16. *Labyrinth patterns in confined granular-fluid systems* B. Sandnes, H. A. Knudsen, K.J. Måløy and E.G. Flekkøøy, Phys. Rev. Lett. **99** 038001 (2007).
17. Ø. Johnsen, R. Toussaint, K.J. Måløy, E.G. Flekkøøy and J. Schmittbuhl *Coupled air/granular flow in a linear Hele-Shaw Cell* Phys. Rev. E **77** 011301 (2008)
18. *Granular labyrinth structures in confined geometries* H. A. Knudsen, B. Sandnes, E.G. Flekkøøy and K.J. Måløy Phys. Rev. E. **77** 021301 (2008)
19. S. Pride and E. G. Flekkøøy and Olav Aursjø *Seismic stimulation for enhanced oil recovery* Geophysics **73** 1.2968090 (2008)
20. *Steady state two phase flow in porous media: Statistics and transport properties.* K.T. Tallakstad, H. A. Knudsen, T. Ramstad, G. Løvold, K.J. Måløy, R. Toussaint and E.G. Flekkøøy, Phys. Rev. Lett. **102** 074502 (2009).

Books

1. Eirik G. Flekkøøy and Knut Jørgen Måløy, *Sandslott og flodbølger– Den fantastiske fysikken omkring oss* Cappelen 2006

2. E. G. Flekkøy and J. O. Fossum The chapter on complexity in the book *Naturens kode*, Ed. G. Einevoll and Eirik Newt Gyldendahl (2005)