Science Outreach.

The press is communicating some of our results (as well as their importance and significance) to the
general public. This is a role that the American Physical Society, American Institute for Physics,
American Association for the Advancement of Science, the National Science Foundation, etc. are
strongly urging scientists to fill.

Outreach efforts to the general public have been repeatedly described by policymakers as crucial to
the survival of support for science.

Recent work (about ten year’s period: circa 1992—2003) by our group has been fea-
tured in:

- *Science News* 142, 231 (Oct. 92)
- *Science News* 144, 261 (Oct. 93)
- *Physics World* 6, 42 (Dec. 93)
- *Science* 264, 200 (April 94)
- *New Scientist*, p. 36 (12 March 1994)
- *Science News* 147, 198 (April 95)
- *American Physical Society News* 4, 8 (June 95)
- *American Institute of Physics: Physics News* 261 (March 6, 96)
- *Science* 271, 1373 (March 8, 96)
- *American Physical Society News* 5, 9 (June 96)
- *Physics Today* (“Search and Discovery” section) 50, No. 6, 19 (June 97)
- *Science News* 152, No. 3, 37 (July 97)
- *American Institute of Physics: Physics News* 331 (July 24, 97)
- *Scientific American* (August, 1997)
- 1998: translations into Japanese, Chinese, Spanish, German, French, Polish, Arabic, etc. of
our *Scientific American* article.

Stations) (1998). (Note: For over 25 years, Science Report Radio has been played regularly on 181 stations
nationwide. It is the nation’s longest running radio science feature. Each program reaches approximately four
million listeners. At least one radio station in 19 of the top 20 markets broadcasts the show. In 1997, Science
Report also became available via the Public Radio Satellite System).


• *Physics World*, 12, No. 4, p. 24 (April 1999); coverstory.

• 1999 *American Physical Society*: Centennial Exhibit celebrating the 100 years of the APS. Very large posters and also videos on our theory work on vortex dynamics were featured right next to the “history of superconductivity” exhibit. Only another group, Argonne National Laboratory, was featured (experiments on vortex dynamics).


• Newspapers in the US (e.g., *Dallas Morning News*, Oct. 20, 1997, Discovery Section, Cover Story); also in newspapers in Michigan and Colorado.

• Newspapers abroad (e.g., Swiss *Die Weltwoche*, Oct. 2 1997, Science Section, Full page article; and also in Germany).

• Science Magazines abroad. For instance, the December 1997 issue of the European science magazine *Focus* (with a circulation of over 300,000 copies per issue) devoted five pages (p. 32-36), including an interview, and also in the cover; the weekly *Panorama* (page 165; May 14, 1994) also featured our work.


• 1998: Several of our results are very prominently featured and described in some detail in Chapter 2 of the book: *Self-organized Criticality: Emergent Complex Behavior in Physical and Biological Systems*, by H. Jensen (Cambridge, 1998). This book is used in several specialized graduate courses and is considered one of the best introductions to the area of emergent complex behavior in physical systems, viewing self-organization as a critical phenomenon (i.e., applying ideas of critical phenomena to jammed systems like granular assemblies, vortices in superconductors, dislocations in materials, charge density waves, fault dynamics, etc.).


• 1999: 10-minutes Television program broadcasted by The Learning Channel (part of the Discovery Channel Network). It was first broadcasted on February 15, 16, and 17 of 1999, and replayed many times later. The Discovery Channel is broadcasted in 18 languages over eight networks by 13 satellites worldwide, reaching over 39 million homes internationally in 144 countries and 71 million households in the United States.

• 2000: The Discovery Channel: Television program first broadcasted in the summer of 2000, and rebroadcasted many times since then. In early October of 1999, the TV filming crew (from Europe) and myself spent several days in Sand Mountain, Nevada. There, I explained the mechanism of acoustic emissions of sand avalanches. In the previous TV program, in 1999, a different TV director flew from Los Angeles and filmed here on campus, filming some lab demonstrations and an interview. I helped with the initial versions of the script and as an advisor to both programs. The 1999 program was centered in our research. The 2000 program was more general and briefly mentioned it (in this one our input was mostly as an advisor to the program, and as an on-site guide in Nevada while measurements were taken with a group from the University of Nevada).


- *Electronics Weekly*, November 06, 2002, News; Pg. 5, on our results on “Quantum qubits”.


- Our work motivated the long article “Thoughtful about uploading”, Bill Tammeus, Kansas City Star, November 2, 2002.


- The December 2002 issue of *Science and Technology Trends* (number 21, Dec. 2002) has a one-page article featuring our November 2002 PRL results. This is a publication of the “Science and Technology Foresight Center” of the National Institute of Science and Technology Policy (NISTEP). The latter is part of the Ministry of Education, Culture, Science and Technology. Japan. It is available on-line in English at http://www-personal.engin.umich.edu/~nori/scalable/

Newspaper articles overseas include the following ones:


- *Nikkei* (this important newspaper is the Japanese version of the “Wall Street Journal”), Friday, October 25, 2002.


2002: Our publication “Experimentally-realizable devices for controlling the motion of magnetic flux quanta in anisotropic superconductors”, S. Savelev and F. Nori, published in *Nature Materials*, **1**, 179 (November 2002), has been:

- Listed on the cover of the November issue of *Nature Materials*.


- *Nikkei* (this newspaper is the Japanese version of the “Wall Street Journal”), Monday, January 6, 2003. An article on Page 23 describing these results.


- The UM press release in http://www.umich.edu/~newsinfo/Releases/2002/Nov02/r110402c.html was covered by news agencies and newswire services, including: (*) *Innovations Report*, Forum für Wissenschaft, Industrie und Wirtschaft, a technical news site in Germany); (*) *AScribe*, The Public Interest Newswire; (*) *NewsWise*, that covers new science and technology developments.

• 2003: Our work Observing Brownian motion in vibro-fluidized granular matter, by G. D’Anna, et al. Nature, 424, 909-912 (August 21, 2003), available on-line at http://www.nature.com/nature/links/030821/030821-1.html has been featured in (the list below is very incomplete):
  – Cover Story of Nature (August 21st 2003 issue of Nature). The text accompanying the cover photo was: “Against the Grain. Brownian motion in a non-equilibrium system”.
  – A companion “News and Views” in that issue of Nature.
  – TV programs. Three examples (of about five minutes each) were broadcasted in Europe (one on the German “Fokus” (by MTW: Menschen Technik Wissenschaft), a different program in Italian, and a quite different one in French). Also in radio programs (e.g., Radio Swiss International).
  – Featured (in all languages of the European Union) in the High-Tech News of “Euronews”.
  – Long Newspaper articles include Il Secolo XIX, Agosto 27, 2003, page 31, (in Italian) in the section on “Research and Science”. Also, Sole 24 Ore, Settembre 11, 2003, the most important Italian newspaper on finances and the economy.
  – News coverage in French include: L’Hebdo, Le Temps, 24 Heures.
  – News coverage in German include: Tages-Anzeiger, Neue Zürcher Zeitung, St. Galler Tagblatt Gesamtausgabe, Basler Zeitung.
  – Interviewed by Nikkei, the most important Japanese newspaper on finances and the economy.
  – the University of Michigan press release in
    http://ipumich.temppublish.com/cgi-bin/print.cgi?Releases/2003/Aug03/r082003
    was covered by news agencies and newswire services, including:
      * World Wide News Headliner.

• 2003: Our work on vortex dynamics in superconductors will be featured in part of a television program, prepared by the Danish Broadcast Corporation, about the study of superconducting materials.

– for several weeks as the top-listed research news in the front page of the University of Michigan web site (www.umich.edu). This web site gets a lot of traffic everyday. The actual press release is in http://www.umich.edu/news/Releases/2003/Jun03/r061903.html.
A very nontechnical and brief graphical summary is in http://www.umich.edu/news/Releases/2003/May03/img/ratchets.jpg
– Newswise/Science News also appeared in Small Times magazine (presenting technological advances in nano-science). http://www.smalltimes.com
– Le Scienze, the Italian version of Scientific American, among other science news outlets.

• 2003: Our recent publication “Reversible Rectifier that Controls the Motion of Magnetic Flux Quanta in Superconductors”, by J.E. Villegas, S. Savel’ev, F. Nori, E.M. Gonzalez, J.V. Anguita, R. Garcia, and J.L. Vicent, Science 302 1188 (2003) has been featured in several venues including:

– an “Enhanced Perspectives” in Science 302 1159 (2003). It is available on-line at http://www.sciencemag.org/cgi/content/full/302/5648/1159. This is the only “Enhanced Perspectives” of that issue of Science, with dozens of links with further information on the subject, and one of three “Enhanced Perspectives” covering all of physics for 2003.
– prominently featured in the page “This week in Science” of that issue of Science (Nov. 14, 2003).
– High-Tc Update (November 2003).
– Newspapers in Europe (e.g., El Pais, Madrid), Japan, and the USA.