FRANCISCO GUINEA

Education

Ph. D. Universidad Autonoma de Madrid. 1980
B. Sc. Universidad Complutense de Madrid. 1975

Appointments

2014- Senior researcher. IMDEA Nanoscience, Madrid (Spain) 2014- Professor. University of Manchester, (UK)
1993-2014 Senior Researcher, CSIC (Spain)
1987-1993 Researcher, CSIC (Spain)
1984-1987 Assistant Professor (tenured), Universidad Autonoma de Madrid (Spain)
1982-1984 Fullbright Scholar, Institute for Theoretical Physics, University of California at Santa Barbara (USA)
1980-1982 Assistant Professor (non tenured), Universidad Autonoma de Madrid (Spain)
1976-1980 Doctoral Fellow, CSIC (Spain)
Other positions
2004-2005 Invited Scholar. Boston University (USA)
1997, Feb.-Aug. Invited Scholar, University of California at San Diego (USA)
1991-1992 Uhlenbeck Professor, University of Michigan at Ann Arbor (USA)

Research interests

Francisco Guinea has an extensive record of scientic contributions. As of June 2016, the Web of Science archive shows about 400 publications with over 30.000 citations, an h index of 75, and 55 articles with more than 100 citations.
The papers cover many topics in condensed matter and statistical physics, including mesoscopic systems and quantum dissipation, materials science with emphasis on highly correlated systems, non equilibrium pattern formation, magnetism, and superconductor and semiconductor physics. Many articles deal with problems at the interface between these areas, and they show how concepts developed in a given subeld can be usefully applied to others.
The list of scientific articles illustrate the broad reach of the collaborations. The Web of Science identities more than 200 co-authors from over 30 countries. There is also a small but constant fraction of single author papers. The bulk of the scientific production deals with theoretical modeling, although about 10%-20% of the papers involve collaborations with experimental groups.
Research activities in other institutions
Francisco Guinea has been invited for long term stays at a number of other institutions, like the KITP, Santa Barbara, University of Michigan at Ann Arbor, University of California at San Diego, and Boston University.
He has also been invited for shorter stays to the IBM Research Lab at R uschlikon, Switzerland, Technical University, Delft, Kernforschunganlage, J ulich, ENS, Paris, University of Karlsruhe, University of California at Davis, Los Alamos National Lab, University of California at Riverside, ICTP Trieste, Tel Aviv University, DIPC San Sebasti_an, and others.

Francisco Guinea leads a group at the Imdea and CSIC made up of four persons with permanent positions and a dozen non permanent collaborators on the average, including postdocs, Ph. D. students, and long term visitors. Funding comes from national sources (MINECO), the ERC Advanced Grant program, and the European Union, through the Graphene Flagship initiative
and others.

Theses supervision

Francisco Guinea has supervised six Ph. D. students, and is currently supervising three more.
A number of former graduate students and postdocs from the group have continued successful research careers. The researchers from the group who have obtained recently permanent or tenure track positions are E. Bascones, T. Stauber, B. Valenzuela, P. San-Jos_e, and E. Castro.

Administrative activities

Francisco Guinea has coordinated the activities in physics and mathematics of the Spanish Agency for Evaluation and Prospective, ANEP, during the years 1993-1996, and he has supervised the physics activities of the Spanish National Program for Basic Science from 2002 to 2004.
He is regularly consulted by funding agencies in the European Union, USA, Germany, France, Israel, and Argentina.
Francisco Guinea been a member of the Divisional Editorial Board of Physical Review Letters for two three year terms, and he is currently member of the Editorial Board of the New Journal of Physics, the Editorial Board of the Springer Lecture Notes in Physics, and Physical Review B. He referees papers frequently for many journals, and he has received the Outstanding Referee Award from the American Physical Society.

Outreach activities

Francisco Guinea has been regularly invited to participate in outreach and dissemination activities. He is a frequent contributor to the Journal Club for Condensed Matter Physics, http://www.condmatjournalclub.org/, and, more recently, to the online journal Physics, http://physics.aps.org/.
In collaboration with M. A. H. Vozmediano and J. Gonzalez, he has written the article Grafeno, for the Sept. 2010 issue of Investigacion y Ciencia, the version in Spanish of Scientic American.

Honors

Beller Lectureship Award from American Physical Society (2010).
"Blas Cabrera" biannual Spanish National Prize for Physics, (2011).
Spanish Physical Society Medal, highest honor bestowed every year by the Spanish Physical Society (2013).

Some selected publications from the last years

Electron-Electron Interactions in Graphene: Current Status and Perspectives, V.

Kotov, B. Uchoa, V. M. Pereira, F. Guinea, A. H. Castro Neto, Rev. Mod. Phys. 84, 1067 (2012).
Designer Dirac fermions and topological phases in molecular graphene, K. K. Gomes, W. Mar, Wonhee Ko, F. Guinea, H. C. Manoharan, Nature 483, 306 (2012).
Dirac cones reshaped by interaction e_ects in suspended graphene, D. C. Elias, R. V. Gorbachev, A. S. Mayorov, S. V. Morozov, A. A. Zhukov, P. Blake, L. A. Ponomarenko, I. V. Grigorieva, K. S. Novoselov, F. Guinea, A. K. Geim, Nature Phys. 7, 701 (2011).
Gauge _elds in graphene, M. A. H. Vozmediano, M. I. Katsnelson, F. Guinea, Phys. Rep. 496, 109 (2010).
Strain induced pseudomagnetic _elds over 300T in graphene nanobubbles, N. Levy, S. A. Burke, K. L. Meaker, M. Panlasigui, A. Zettl, F. Guinea, A. H. Castro Neto, M. F. Crommie, Science 329, 544 (2010).
Energy gaps, topological insulator state and zero-_eld quantum Hall e_ect in graphene by strain engineering, F. Guinea, M. I. Katsnelson, A. K. Geim, Nature Physics 6, 30 (2010).
The electronic properties of grapheme, A. H. Castro Neto, F. Guinea, N. M. Peres, K. S. Novoselov, and A. K. Geim, Rev. Mod. Phys. 81, 109 (2009).

Other selected publications
Universal features in the equation of state of metals J. H. Rose, J. R. Smith, F. Guinea, and J. Ferrante, Phys. Rev. B 29 2963 (1984).
Diffusion and localization of a particle in a periodic potential coupled to a dissipative environment F. Guinea, V. Hakim, and A. Muramatsu, Phys. Rev. Lett. 54 263 (1985).
Coherent charge oscillations in tunnel junctions, F. Guinea, and G. Sch on, Europhys. Lett. 1 585 (1986).
Continuum approximation to fullerene molecules J. Gonz_alez, F. Guinea, and M. A. H. Vozmediano, Phys. Rev. Lett. 69, 172 (1992).
Non Fermi-liquid behavior of electrons in the honeycomb lattice. A Renormalization Group Approach, J. Gonz_alez, F. Guinea and M. A. H. Vozmediano, Nucl. Phys. B 424, 595 (1994).
Some aspects of the phase diagram of doped manganites, D. P. Arovas, and F. Guinea, Phys. Rev. B 58, 9150 (1998).
Spin ip scattering in magnetic junctions F. Guinea, Phys. Rev. B 58, 9212 (1998).
Aharonov-Bohm oscillations of a particle coupled to dissipative environments F. Guinea, Phys. Rev. B 65, 205317 (2002).

Some recent scientific meetings where the work of Francisco Guinea was presented
Electronic properties of graphene, KITP, Santa Barbara, USA. January 2007. Member of the organizing committee.
Magnetism, superconductivity, and phase transitions in novel materials Kolkatta, India. November 2009
Okayazaki Conference on Carbon Allotropes, Okayazaki, Japan. February 2009.
Progress in Spintronics and Graphene Research CKITP, Beijing, China. May 2010. Member of the organizing committee.

The Physics of Graphene, KITP, Santa Barbara, USA. Jan.-March 2012. Member of the organizing committee.