NSF BIOGRAPHICAL SKETCH

NAME: Vinals, Jorge

POSITION TITLE & INSTITUTION: Professor of Physics, University of Minnesota

(a) PROFESSIONAL PREPARATION -(see PAPPG Chapter II.C.2.f.(a))

INSTITUTION	LOCATION	MAJOR / AREA OF STUDY	DEGREE (if applicable)	YEAR YYYY
University of Barcelona	Barcelona, Spain	Physics	PHD	1983
Temple University	Philadelphia, PA		Postdoctoral Fellow	1983 - 1985
Carnegie Mellon University	Pittsburgh, PA		Postdoctoral Fellow	1985 - 1989

(b) APPOINTMENTS -(see PAPPG Chapter II.C.2.f.(b))

2010 - present Professor of Physics, University of Minnesota, Minneapolis, MN

2010 - 2015 Director, Minnesota Supercomputing Institute, University of Minnesota, Minneapolis, MN

2007 - 2010 Director, CLUMEQ, a Compute Canada HPC consortium, McGill University, Montreal

2004 - 2010 Professor of Physics and Canada Research Chair in Nonequilibrium Materials, McGill University, Montreal

2004 - 2007 Director, McGill Institute for Advanced Materials, McGill University, Montreal

2001 - 2002 NIH National Research Service Senior Fellow, Donald Danforth Plant Science Center, St. Louis, MO

1994 - 2004 Program director and Associate Professor, School of Computational Science and Information Technology, Florida State University, Tallahassee, FL

1989 - 2004 Research Scientist, Supercomputer Computations Research Institute, Florida State University, Tallahassee, FL

(c) PRODUCTS -(see PAPPG Chapter II.C.2.f.(c))

Products Most Closely Related to the Proposed Project

1. Skaugen A, Angheluta L, Viñals J. Separation of Elastic and Plastic Timescales in a Phase Field Crystal Model. Phys Rev Lett. 2018 Dec 21;121(25):255501. PubMed PMID: 30608801.
2. Salvalaglio M, Angheluta L, Huang Z, Voigt A, Elder K, Vinals J. A coarse-grained phase field crystal model of plastic motion. Journal of the Mechanics and Physics of Solids. 2020 April; 137:103856. Available from: https://doi.org/10.1016/j.jmps.2019.103856
3. Skogvoll V, Angheluta L, Skaugen A, Vinals J. A phase field crystal theory of the kinematics of dislocation lines. Journal of the Mechanics and Physics of Solids. 2022 September; 166:104932. Available from: https://www.sciencedirect.com/science/article/pii/S0022509622001296?via%3Dihub DOI: 10.1016/j.jmps.2022.104932
4. Acharya A, Vinals J. Field dislocation mechanics and phase field crystal models. Physical Review B. 2020 August 31; 102:064109. Available from: https://journals.aps.org/prb/abstract/10.1103/PhysRevB.102.064109 DOI: 10.1103/PhysRevB.102.064109
5. Acharya A, Angheluta L, Vinals J. Elasticity versus phase field driven motion in the phase field

crystal model. Modelling and Simulation in Materials Science and Engineering. 2022 August 19; 30:064005. Available from: https://iopscience.iop.org/article/10.1088/1361-651X/ac860b DOI: 10.1088/1361-651X/ac860b

Other Significant Products, Whether or Not Related to the Proposed Project

1. Boyer D, Viñals J. Weakly nonlinear theory of grain boundary motion in patterns with crystalline symmetry. Phys Rev Lett. 2002 Jul 29;89(5):055501. PubMed PMID: 12144448.
2. Skaugen A, Angheluta L, Vinals J. Dislocation dynamics and crystal plasticity in the phase field crystal model. Physical review. B, Condensed matter. 2018; 97:054113. Available from: https://journals.aps.org/prb/abstract/10.1103/PhysRevB.97.054113
3. Perreault B, Vinals J, Rickman J. Impact of lattice rotation on dislocation motion. Physical Review. B, Condensed matter. 2016; 93:014107. DOI: 10.1080/01418619708209855
4. Gurtin M, Polignone D, Vinals J. Two phase binary fluids and immiscible fluids described by an order parameter. Mathematical models & methods in applied sciences : M3AS. 1996; 6:815. Available from: http://dx.doi.org/10.1142/S0218202596000341
5. Rickman J, Vinals J. Modelling of dislocation structures in materials. Philosophical Magazine A. 2006 August 30; 75(5):1997. DOI: 10.1080/01418619708209855

(d) SYNERGISTIC ACTIVITIES -(see PAPPG Chapter II.C.2.f.(d))

1. Education and Outreach. Implementation team of the Southeastern University and College Coalition for Engineering Education program (SUCCEED), part of the NSF Engineering Education Coalition Program, and member of its Assessment and Evaluation Council. Lead and participate in Summer research programs for undergraduates at the Minnesota Supercomputing Institute (MSI). Public outreach at MSI and at the McGill Institute for Advanced Materials. Lead and participate in interdisciplinary graduate programs at the Supercomputing Research Institute (Florida State U.).
2. Microgravity Research. Member of NASA Science Concept Review Board for the review and approval of experimental programs in Materials Science or Fluid Dynamics onboard Space Shuttle and International Space Station.
3. Interdisciplinary Research Activities. NSF-KDI (Knowledge and Distributed Intelligence), “Amorphous and crystalline ice growth". NSF-DMREF (Materials Genome Initiative), “Materials engineering of chromonic and colloidal liquid crystals via mathematical modeling and simulation". Data cyberinfrastructure: "RAISE: A Materials Science Gateway for X-ray Imaging and Modeling of Microstructures".
4. High Performance Computing. Principal Investigator in Grand Challenge projects at DoE NERSC, and ACL at Los Alamos National Laboratory. Board member of c3.ca and of Compute Canada. President of the Great Lakes Consortium for Petascale Computing (based at the National Petascale Facility, UIUC). Member of the Blue Waters Science and Engineering Technical Advisory Board. NSF/ACCESS External Advisory Board.
5. Data Science and Informatics. Co-investigator in University of Minnesota Clinical and Translational Science Institute, an NIH funded institutional effort to create a comprehensive statewide network for clinical and translational science. Member of the steering committees of the University of Minnesota Informatics Institute, the Academic Health Center Information

Exchange, and the Biomedical Health Informatics Institute.