

# Curriculum Vita

September 30, 2003

## 1. Gary Felder

## 2. Contact Information

Work: Clark Science Center  
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## 3. Degrees

Doctorate	June, 2001	Stanford University	“Mechanisms of Reheating After Inflation”
Bachelor’s	June, 1993	Oberlin College	Physics

## 4. Awards and Honors

- The William Elgin Wickenden Award for the best paper published in the *Journal of Engineering Education* in 2002 (see publication list).
- Paper selected as one of “highlights of the year” by the editors of *Classical and Quantum Gravity*, 2002 (see publication list).
- 1992/93 Carl E. Howe award for outstanding senior in physics (Oberlin College).
- 1991/92 R. Weinstock award for outstanding junior in physics (Oberlin College).

## 5. Employment History

- Assistant Professor, Smith College Physics Department: 7/03-*present*.
- Postdoctoral fellow, Canadian Institute for Theoretical Astrophysics: 8/01-7/03. Research on cosmology and high energy theoretical physics.
- Research assistant, Stanford University: 4/97-6/01. Doctoral research on inflationary cosmology.
- Research intern, N.C. State University. 6/919/91; 6/929/92; 6/932/94; 5/955/96. Research on engineering education, including statistical data analysis (SAS).
- Private contractor, On Technology, Raleigh, North Carolina. 1/952/95. Troubleshooting and installation of new hardware.

- Technical assistant, One Tree Software, Raleigh, North Carolina. 10/93-2/94. Technical support and office management.
- Mathematics and physics tutor. NC State University, 1/87-5/88 and 9/93-12/93, and Oberlin College, 9/88-12/92. Duties at Oberlin included teaching recitation sections.
- Research intern, Oberlin College, 9/89-9/90. Measured total nuclear reaction cross sections, made theoretical predictions using various models, and compared the data to the predictions.

## 6. Grants Received

- The Mellam Family Foundation Fellowship for graduate study, 2000-2001.
- NATO Linkage Grant 975389: “The Origin of Matter in the Universe,” 1999-2002.
- Canadian Institute for Theoretical Astrophysics pre-doctoral fellowship, 1999-2000.
- National Science Foundation fellowship for graduate study, 1996-1999.
- B.P. America Academic Year Assistantship for undergraduate research, 1989-1990.

## 7. Publications

(All journal articles were refereed.)

### • Physics Publications

1. G. Felder and L. Kofman, “Does the Rolling Tachyon Fragment Into Black Holes?,” *in progress*.
2. J. Martin, G. Felder, A. Frolov, M. Peloso, and L. Kofman, “Braneworld Dynamics with the Branecode,” *submitted to Phys. Rev. D*, hep-th/0309001.
3. G. Felder, L. Kofman, and A. Starobinsky, “Caustics in Tachyon Matter and Other Born-Infeld Scalars,” JHEP 0209:026 (2002), hep-th/0202017.
4. G. Felder, A. Frolov, L. Kofman, and A. Linde, “Cosmology With Negative Potentials,” Phys. Rev. D **66**:023507 (2002), hep-th/0202017.
5. G. Felder, A. Frolov, and L. Kofman, “Warped Geometry of Brane Worlds,” Class. Quant. Grav. **19**:2983-3002 (2002), hep-th/0112165. This paper was selected as one of the highlights of the year by the editors of *Classical and Quantum Gravity*.
6. G. Felder, L. Kofman, and A. Linde, “Tachyonic Instability and Dynamics of Spontaneous Symmetry Breaking,” Phys. Rev. D **64**:123517 (2001), hep-th/0106179.
7. G. Felder, J. Garcia-Bellido, P. Greene, L. Kofman, A. Linde, and I. Tkachev, “Dynamics of Symmetry Breaking and Tachyonic Preheating,” Phys. Rev. Lett. **87**:011601 (2001), hep-ph/0012142.
8. G. Felder and L. Kofman, “The Development of Equilibrium After Preheating,” Phys. Rev. D **63**:103503 (2001), hep-ph/0011160.
9. G. Felder, L. Kofman, A. Linde, and I. Tkachev, “Inflation After Preheating,” JHEP 0008:010 (2000), hep-ph/0004024.
10. G. Felder, L. Kofman, and A. Linde, “Gravitational Particle Production and the Moduli Problem,” JHEP 0002:027 (2000), hep-ph/9909508.
11. G. Felder, L. Kofman, and A. Linde, “Inflation and Preheating in NO Models,” Phys. Rev. D **60**:103505 (1999), hep-ph/9903350.

12. G. Felder, L. Kofman, and A. Linde, "Instant Preheating," Phys. Rev. D **59**:123523 (1999), hep-ph/9812289.
13. R. E. Warner, H. W. Wilschut, W. F. Rulla, and G. N. Felder, "Average Reaction Cross Sections for 74- to 112-MeV Alpha Particles on  $^{127}\text{I}$  and  $^{133}\text{Cs}$ ," Phys. Rev. C **43** (3), 1313 (1991).
14. R. E. Warner and G. N. Felder, "Microscopic Calculations of Low-Energy Reaction Cross Sections," Phys. Rev. C **42** (5), 2252 (1990).

- **Physics Conference Proceedings**

1. G. Felder, A. Frolov, and L. Kofman, "Warped Geometry of Brane Worlds with Scalar Fields," Proceedings of the workshop - Brane World: New Perspective in Cosmology, Progress of Theoretical Physics Supplement **148**, 165 (2002).
2. G. Felder, "Warped Geometry of Brane Worlds," Proceedings for the Fifth Alexander Friedmann International Seminar on Gravitation and Cosmology, International Journal of Modern Physics A, **17** (29), 4297 (2002).
3. G. Felder, "Nonlinear Dynamics of Interacting Fields," Proceedings for CAPP 2000: Conference on Cosmology and Particle Physics, AIP Conf. Proc. **555**, 285 (2001).
4. G. Felder, "Inflation After Preheating," Proceedings for Cosmo 98: International Workshop on Particle Physics and the Early Universe, AIP Conf. Proc. **478**, 58 (1999).

- **Education Publications**

1. R. M. Felder, G. N. Felder, and E. J. Dietz, "The Effects of Personality Type on Engineering Student Performance and Attitudes," J. Engr. Education **91** (1), 3 (2002). This paper was selected by the American Society for Engineering Education as the best paper of 2002 in this journal.
2. R. M. Felder, G. N. Felder, and E. J. Dietz, "A Longitudinal Study of Engineering Student Performance and Retention. V. Comparisons with Traditionally-Taught Students," J. Engr. Education **87** (4), 469 (1998).
3. R. M. Felder, G. N. Felder, M. Mauney, C. E. Hamrin Jr., and E. J. Dietz, "A Longitudinal Study of Engineering Student Performance and Retention. III. Gender Differences in Student Performances and Attitudes," J. Engr. Education **84** (2), 151 (1995).
4. R. M. Felder and G. N. Felder, "Is the Quality of American Students Really Declining?" Chem. Engr. Progr., 79, (1992). Translated into Spanish and reprinted as "Realmente Esta Dismuyendo la Calidad de los Estudiantes Norteamericanos?" Educacion Quimica **5** (1), 32 (1994).

- **Education Conference Proceedings**

1. R. M. Felder, G. N. Felder, M. Mauney, C. E. Hamrin Jr., and E. J. Dietz, "Women in Engineering: Falling into the Gender Gap," Proceedings for the annual meeting of the American Society for Engineering Education (1994).

## 8. Performances *not applicable*

## 9. Lectures and Presentations

### • Conference Presentations

1. “Radiating Tachyon Matter,” the Eighth Claude Itzykson Meeting: Which Model(s) for the Early Universe?, Saclay, France, June, 2003.
2. “Warped Geometry of Brane Worlds,” the Fifth Alexander Friedmann International Seminar on Gravitation and Cosmology, João Pessoa, Brazil, April, 2002.
3. “From Preheating to Equilibrium,” CAPP 2000: Conference on Cosmology and Particle Physics, Verbier, Switzerland, July, 2000. Also presented at Kingston 2000: The CITA Reunion Meeting, Toronto, ON, Canada, Aug. 2000.
4. “Gravitational Particle Production and the Moduli Problem,” PASCOS 99: 7th International Symposium on Particles, Strings, and Cosmology, Granlibakken, Lake Tahoe, California, Dec. 1999.
5. “Inflation After Preheating,” Cosmo 98: International Workshop on Particle Physics and the Early Universe, Institute for Nuclear and Particle Astrophysics and Cosmology, University of California, 1998. Also presented at the Pritzker Symposium on the Status of Inflationary Cosmology, University of Chicago, Feb. 1999.
6. “Reaction Cross Sections of Alpha Particles on Cesium Iodide,” 1990 National Conference on Undergraduate Research, Schenectady, NY, April 1990.

### • Invited Seminars

1. “The Big Bang in a Box: Simulating the Early Universe,” University of Massachusetts, Amherst, MA, *upcoming October, 2003*.
2. “The Very Early Universe,” Our Lady of Mt. Carmel High School, Mississauga, ON, November, 2002.
3. “Fixing the Big Bang With Inflation,” Millikin University, Decatur, IL, November, 2002. Also presented at the University of Toronto, Toronto, ON, November, 2002, Creighton University, Omaha, NE, December, 2002, Williams College, Williamstown, MA, January, 2003, Kennesaw State University, Kennesaw, GA, January, 2003, Santa Clara University, Santa Clara, CA, January, 2003, Harvey Mudd College, Claremont, CA, January, 2003, and Smith College, Northampton, MA, February, 2003.
4. “Scalar Field Cosmology,” St. Mary’s College, Halifax, NS, October, 2002.
5. “The Big Bang Model, or Where Did All This Stuff Come From?” York University Astronomy Club, Toronto, ON, February, 2002.
6. “Warped Geometry of Brane Worlds,” Institute for Theoretical Physics, Stanford University, Stanford, CA, November, 2001.
7. “Tachyonic preheating,” Institute for Theoretical Physics, Stanford University, Stanford, CA, March, 2001.
8. “A Primer on Inflation,” University of Toronto Astronomy Department, Toronto, ON, December, 1999.
9. “Reheating: Theory and Simulations,” Canadian Institute for Theoretical Astrophysics, Toronto, ON, February, 1999.

## 10. Other Professional Activities

- **Research Supervision**

1. Lauren Barth-Cohen, Smith, Special studies course, “Mapping the Curved Spaces of General Relativity,” *ongoing*.
2. Nima Taheri-Lotfi, University of Toronto, Senior astronomy research project, “The Self-Reproducing Inflationary Universe,” 2002-2003.

- **Research Activities**

I’m currently setting up a computational physics lab at Smith. This will be one of the most powerful computer clusters for physics research at a liberal-arts institution. In addition to using it for my work and my students’ research, I intend to make it available as a resource to the Smith science community.

- **Other**

I have refereed numerous papers for *Physical Review* and *Physical Review Letters*. In addition to the invited seminars listed above I’ve also spoken about astronomy and physics to elementary school groups, astronomy open-houses, and student clubs. In Fall 2003 I’ll be speaking about cosmology simulations in a Smith computer science course and speaking about the early universe in the Smith Sigma Xi lecture series.

## 11. Professional Memberships

- American Physical Society, 2002.
- Sigma Xi, 1993.
- Phi Beta Kappa, 1992.

## 12. College Service

- Smith College physics department library liason, 2003.
- Canadian Institute for Theoretical Astrophysics computing committee, 2001-2003.
- Stanford University physics department qualifying exam committee, 2000-2001.
- Stanford University physics department tutor (unpaid) for graduate students preparing for the qualifying exam.