

# CURRICULUM VITAE

## RODNEY W. FORCADE

Professor of Mathematics  
Department of Mathematics  
Brigham Young University  
Provo, UT 84602  
(801) 422-2379  
forcader@math.byu.edu

### Education and Training

University of Chicago, BS in mathematics (1961), MS in mathematics (1963)  
University of Washington, PhD in mathematics, 1971

### Research and Professional Experience

Professor of Mathematics, Brigham Young University, 1988–present.  
Associate Professor of Mathematics, Brigham Young University, 1981–1988.  
Assistant Professor of Mathematics, Universidad de Puerto Rico, 1979–1981.  
Temporary Appointment in Mathematics, Illinois State University, 1971–1975.  
Mathematics Instructor, Southern Illinois University, Edwardsville, 1963–1966

### Honors

Co-developer (with Helaman Ferguson) of the Ferguson-Forcade Algorithm, an integer relation finding algorithm. Our algorithm, originally developed in 1977 and published in 1982 was chosen by the editors of Computing in Science and Engineering as one of the top ten algorithms of the 20th century.

- Dongarra and Sullivan, “Top Ten Algorithms of the Century”, Computing in Science and Engineering, Jan./Feb. 2000
- Barry A. Cipra, “The Best of the 20th Century: Editors Name Top 10 Algorithms,” SIAM News **33** (2000).

### Synergistic Activities

- Taught (with Professor Wayne Barrett) a short Summer course for High School Summer Scholars in cryptography at BYU in 2008.
- Have mentored undergraduate research students for several years.

### Publications

1. W. S. Morgan, J. E. Christensen, P. K. Hamilton, J. J. Jorgensen, B. J. Campbell, G. L. Hart, R. W. Forcade, “Generalized regular  $k$ -point grid generation on the fly,” *Computational Materials Science*, **173**, 109340. (2019).
2. Conrad W. Rosenbrock, Wiley. S. Morgan, Gus L. Hart, Stefano Curtarolo, Rodney W. Forcade, “Numerical Algorithm for Pólya Enumeration Theorem,” *ACM J. Exp. Algorithmics*, **12**(1) (2016), 1.11.

3. William Cocke, Rodney Forcade, H Tracy Hall, “The local minima in the lattice-simplex covering problem,” *J. Combin. Math. Combin. Comput.* **90** (2014), 117—122.
4. Gus L. W. Hart, Lance J. Nelson, Rodney W. Forcade, “Generating derivative structures at a fixed concentration,” *Comp. Mat. Sci.* **59** (2012), 101—107.
5. Gus L. W. Hart and Rodney W. Forcade, “Generating derivative structures from multilattices: Application to hcp alloys,” *Phys. Rev. B* **80** 014120 (July 2009). (selected as an “Editor’s Suggestion”)
6. Daniel Lerch, Ole Wieckhorst, Gus L. W. Hart, Rodney W. Forcade, and Stefan Müller, “UNCLE: Constructing Cluster Expansions for Arbitrary Lattices with Minimal User-Input,” *Modell. and Sim. in Mat. Sci. and Eng.* **17** 055003 (May 2009).
7. Gus L. W. Hart and Rodney Forcade, “Algorithm for generating derivative structures,” *Phys. Rev. B* **77** 224115 (26 June 2008). (Selected as an “Editor’s Suggestion”)
8. R. Forcade, J. Lamoreaux, “Diameter series of lattice covering simplices.” *Discrete Math.* **243** (2002), no. 1-3, 235–239.
9. Rodney Forcade, Jack Lamoreaux, “Lattice-simplex coverings and the 84-shape,” *SIAM J. Discrete Math.* **13** (2000), no. 2, 194–201.
10. Charles M. Fiduccia, Rodney W. Forcade, Jennifer S Zito, “Geometry and diameter bounds of directed Cayley graphs of abelian groups,” *SIAM J. Discrete Math* **11** (1998), no. 1, 157–167.
11. R. W. Forcade, A. D. Pollington, “What is special about 195? Groups,  $n$ th power maps and a problem of Graham,” *Number theory (Banff, AB, 1988)*, 147–155, *de Gruyter, Berlin*, 1990.
12. Wayne W. Barrett, Rodney W. Forcade, Andrew D. Pollington, “On the spectral radius of a  $(0,1)$  matrix related to Mertens’ function,” *Proceedings of the Victoria Conference on Combinatorial Matrix Analysis (Victoria, BC, 1987)*. *Linear Algebra Appl.* **107** (1988), 151–159.
13. Rodney W. Forcade, Jack Lamoreaux, Andrew D. Pollington. “Unsolved Problems: A Group of Two Problems in Groups,” *Amer. Math. Monthly.* **93** (1986), no. 2, 119–121.
14. Rodney W. Forcade, “Hamiltonian paths in tournaments,” *Ars Combin.* **16** (1983), B, 279–284.
15. Douglas M. Campbell, Helaman R. P. Ferguson, Rodney W. Forcade, “Newman polynomials on  $z = 1$ ,” *Indiana Univ. Math. J.* **32** (1983), no. 4, 517–525.
16. H. R. P. Ferguson, Rodney W. Forcade, “Multidimensional Euclidean algorithms,” *J. Reine Angew. Math.* **334** (1982), 171–181.
17. H. R. P. Ferguson, R. W. Forcade, “Generalization of the Euclidean algorithm for real numbers to all dimensions higher than two,” *Bull. Amer. Math. Soc. (N.S.)* **1** (1979), no. 6, 912–914.
18. M. Burmester, R. Forcade, E. Jacobs. “Circles of numbers,” *Glasgow Math. J.* **19** (1978), no. 2, 115–119.
19. Forcade, Rodney, “Smallest maximal matchings in the graph of the  $d$ -dimensional cube,” *J. Combinatorial Theory Ser. B* **14** (1973), 153–156.
20. Forcade, Rodney. “Parity of paths and circuits in tournaments,” *Discrete Math.* **6** (1973), 115–118.

## Submitted for Publication

1. Chahal, J. S., Forcade, R. W., Trombly, A., “A generalized Fibonacci Identity,” submitted to *Fibonacci Quarterly*.