

# Gerd Faltings

Date of birth: 28 Jul 1954

## Academic career

1978	PhD, Münster University
1978–79	Visitor, Harvard University
1979–82	Assistant, Münster University
1981	Habilitation, Münster University
1982–84	Professor, Wuppertal University
1985–94	Professor, Princeton University
1994–	Director, Max Planck Institute, Bonn



## Honours

1984	Dannie Heinemann Preis
1986	Fields Medal
1988	Guggenheim Fellowship
1996	Leibniz-Preis
2008	Karl-Georg-Christian-von-Staudt-Preis
2009	Bundesverdienstkreuz I. Klasse
2010	Gumin-Preis

## Invited Lectures

1986	ICM Plenary Address
1994	ICM invited talk

## Research Projects and Activities

I do research on whatever I find interesting

### Research profile

Diophantine equations, Arakelov theory, abelian varieties, moduli spaces of vectorbundles, p-adic Hodge theory

### Editorships

Associate editor or board member: *Compositio Mathematica*, *Journal of Algebraic Geometry*

**Former Research Area D** I have found a crystalline version of nonabelian p-adic Hodge theory for ‘small’ representations. Motivic cohomology and Diophantine equations: Kim has introduced a new method into Diophantine approximation. The paper [Fal07] constructs a motivic logarithm for arbitrary curves. An open question is the construction of such an object in algebraic K-theory, as well as a good definition of torsors over it.

**Former Research Area E** Using the Hitchin fibration, the dimension of global sections for line-bundles of central charge one on moduli spaces of G-bundles has been computed in [Fal09]. In [Fal10] I determined the image of the Rapoport-Zink period map in the case of  $GL(n)$ , confirming conjectures of Hartl and Rapoport-Zink.

### Research Area DE

### Supervised theses

PhD theses currently: 1

### Selected PhD students

Michael Larsen (1988), now Professor Indiana; Wieslawa Niziol (1991), now Associate Professor Utah; Shinichi Mochizuki (1992), now Professor Kyoto; Jarvis Tyler (1994), now Professor Brigham Young; Christian Liedtke (2004), now Postdoc Stanford; Majid Hadian (2010), now Postdoc Duisburg-Essen.

### Selected publications

- [CF90] CHAI, Ching-Li ; FALTINGS, Gerd: *Ergebnisse der Mathematik und ihrer Grenzgebiete (3) [Results in Mathematics and Related Areas (3)]*. Bd. 22: *Degeneration of abelian varieties*. Berlin : Springer-Verlag, 1990. – xii+316 S. – ISBN 3–540–52015–5. – With an appendix by David Mumford
- [Fal83] FALTINGS, G.: Endlichkeitssätze für abelsche Varietäten über Zahlkörpern. In: *Invent. Math.* 73 (1983), Nr. 3, S. 349–366. – ISSN 0020–9910
- [Fal88] FALTINGS, Gerd: p-adic Hodge theory. In: *J. Amer. Math. Soc.* 1 (1988), Nr. 1, S. 255–299. – ISSN 0894–0347
- [Fal03] FALTINGS, Gerd: Algebraic loop groups and moduli spaces of bundles. In: *J. Eur. Math. Soc. (JEMS)* 5 (2003), Nr. 1, S. 41–68. – ISSN 1435–9855
- [Fal05] FALTINGS, Gerd: A p-adic Simpson correspondence. In: *Adv. Math.* 198 (2005), Nr. 2, S. 847–862. – ISSN 0001–8708
- [Fal07] FALTINGS, Gerd: Mathematics around Kim's new proof of Siegel's theorem. In: *Diophantine geometry* Bd. 4. Ed. Norm., Pisa, 2007, S. 173–188
- [Fal08a] FALTINGS, Gerd: Néron models and formal groups. In: *Milan J. Math.* 76 (2008), S. 93–123. – ISSN 1424–9286
- [Fal08b] FALTINGS, Gerd: Thetafunktionen auf Modulräumen von Vektorbündeln. In: *Jahresber. Deutsch. Math.-Verein.* 110 (2008), Nr. 1, S. 3–17. – ISSN 0012–0456
- [Fal09] FALTINGS, Gerd: Theta functions on moduli spaces of G-bundles. In: *J. Algebraic Geom.* 18 (2009), Nr. 2, S. 309–369. – ISSN 1056–3911
- [Fal10] FALTINGS, Gerd: Coverings of p-adic period domains. In: *J. Reine Angew. Math.* 643 (2010), S. 111–139. – ISSN 0075–4102