

## UH FACULTY CURRICULUM VITAE – GORDON HEIER

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### EDUCATION

- Dr. rer. nat. (Ph.D.) Mathematics, Bochum U., Germany, Summa cum laude, 2002  
Thesis: Some effective results in algebraic geometry  
Advisors: Prof. A. Huckleberry, Prof. Y.-T. Siu
- Dipl. Math. (M.A.) Mathematics (minor: Physics), Bochum U., Germany, 1999  
Thesis: The complex geometry of the period domain of K3 surfaces  
Advisor: Prof. A. Huckleberry

### APPOINTMENTS

- 09/2015 - Associate Professor (with tenure), U. of Houston  
09/2009 - 08/2015 Assistant Professor (tenure-track), U. of Houston  
01/2009 - 05/2009 Research Member, MSRI  
07/2008 - 08/2009 Visiting Assistant Professor, U. of California, Riverside  
08/2006 - 06/2008 A. Everett Pitcher Mathematical Research Scholar, Lehigh U.  
06/2006 - 08/2006 Non-tenure track Assistant Professor, Marburg U., Germany  
09/2005 - 05/2006 Visiting Scholar, U. of Michigan, Ann Arbor  
09/2002 - 08/2005 Postdoctoral Fellow, Harvard U.  
07/2002 - 05/2006 Non-tenure track Assistant Professor, Bochum U.  
09/1999 - 05/2000 Research Assistant, Inst. Math. Research, Hong Kong U.  
02/1999 - 08/1999 Visiting Graduate Student, Harvard U.

### TEACHING

- 2017 Abstract Algebra (Math 3330), Spring 2017, U. of Houston  
2017 Complex Analysis and Geometry II (Math 6353), Spring 2017, U. of Houston  
2016 Complex Analysis and Geometry (Math 6352), Fall 2016, U. of Houston  
2016 Geometry of Manifolds (Math 7350), Spring 2016, U. of Houston  
2016 Modern Algebra II (Math 6303), Spring 2016, U. of Houston  
2015 Modern Algebra I (Math 6302), Fall 2015, U. of Houston  
2015 Complex Analysis and Geometry II (Math 6395), Spring 2015, U. of Houston  
2015 Abstract Algebra (Math 3330), Spring 2015, U. of Houston  
2014 Complex Analysis and Geometry I (Math 6352), Fall 2014, U. of Houston  
2014 Modern Algebra II (Math 6303), Spring 2014, U. of Houston  
2014 Abstract Algebra (Math 3330), Spring 2014, U. of Houston  
2014 Special Problems (Math 6398), Spring 2014, U. of Houston  
2013 Modern Algebra I (Math 6302), Fall 2013, U. of Houston  
2013 Special Problems (Math 6398), Fall 2013, U. of Houston  
2013 Abstract Algebra (Math 3330), Spring 2013, U. of Houston  
2013 Introduction to Complex Analysis and Geometry (Math 6395), Spring 2013, U. of Houston  
2013 Special Problems (Math 6398), Spring 2013, U. of Houston  
2012 Advanced Linear Algebra I (Math 4377/6308), Fall 2012, U. of Houston  
2012 Masters Tutorial (Math 7315), Fall 2012, U. of Houston

### TEACHING (CONTINUED)

- 2012 Masters Tutorial (Math 6315), Summer 2012, U. of Houston  
2012 Masters Tutorial (Math 6315), Spring 2012, U. of Houston  
2012 Senior Research Project (Math 4396), Spring 2012, U. of Houston  
2012 Geometry of Manifolds (Math 7350), Spring 2012, U. of Houston  
2011 Advanced Linear Algebra I (Math 4377/6308), Fall 2011, U. of Houston  
2011 Senior Research Project (Math 3396), Fall 2011, U. of Houston  
2011 Senior Research Project (Math 4396), Summer 2011, U. of Houston  
2011 Senior Research Project (Math 3396), Spring 2011, U. of Houston  
2011 Advanced Linear Algebra II (Math 4378/6309), Spring 2011, U. of Houston  
2010 Advanced Linear Algebra I (Math 4377/6308), Fall 2010, U. of Houston  
2010 Advanced Linear Algebra I (Math 4377/6308), Spring 2010, U. of Houston  
2009 Abstract Algebra (Math 3330), Fall 2009, U. of Houston  
2009 First-Year Calculus (Math 9B), Spring 2009, UC Riverside  
2009 First-Year Calculus (Math 9C), Winter 2009, UC Riverside  
2008 Introduction to College Mathematics for the Sciences (Math 8B),  
Fall 2008, UC Riverside  
2008 Applied Matrix Algebra (Math 23), Fall 2008, UC Riverside  
2008 Linear Algebra and ODE (Math 205), Spring 2008, Lehigh U.  
2007 Multivariable Calculus (Math 23), Fall 2007, Lehigh U.  
Linear Algebra and ODE (Math 205), Spring 2007, Lehigh U.  
2006 Complex Function Theory (Math 416), graduate course, Fall 2006,  
Lehigh U.  
2004-2005 Multivariable Calculus with Applications to Physics (Math 21a),  
Fall 2004, Harvard U.  
1996-1998 Teaching Assistant for Analysis I-III, Bochum U., Germany

### RESEARCH INTERESTS

Algebraic Geometry, Complex Analysis, Differential Geometry, Number Theory.

### LIST OF RESEARCH KEYWORDS

Effective methods in algebraic geometry, complex analysis, and number theory, multiplier ideal sheaves, vanishing theorems, positivity, Fujita Conjecture, Shafarevich Conjecture, Mordell Conjecture, integral and rational points, hyperbolicity, effective Nullstellensatz, finite type domains, complex Neumann problem, Kähler-Einstein metrics and Kähler-Ricci flow on Fano manifolds, (weakly) negative/positive curvature in complex differential geometry, holomorphic sectional curvature, (total) scalar curvature, uniruledness, rational connectedness.

### US FEDERAL GRANTS

National Security Agency, Grant Number H98230-12-1-0235, 2012-2014.

PUBLICATIONS AND PREPRINTS

- A. Chaturvedi, G. Heier. Hermitian metrics of positive holomorphic sectional curvature on fibrations. arXiv:1707.03425.
- G. Heier, S. S. Y. Lu, B. Wong, F. Zheng. Reduction of manifolds with semi-negative holomorphic sectional curvature. arXiv:1705.00605.
- A. Alvarez, G. Heier, F. Zheng. On projectivized vector bundles and positive holomorphic sectional curvature. *Proc. Amer. Math. Soc.* (to appear), arXiv:1606.08347.
- G. Heier, S. S. Y. Lu, B. Wong. Kähler manifolds of semi-negative holomorphic sectional curvature. *J. Differential Geom.*, 104(3):419–441, 2016.
- G. Heier, B. Wong. On projective Kähler manifolds of partially positive curvature and rational connectedness. arXiv:1509.02149.
- A. Alvarez, A. Chaturvedi, G. Heier. Optimal pinching for the holomorphic sectional curvature of Hitchin’s metrics on Hirzebruch surfaces. *Contemp. Math.*, 654:133–142, 2015.
- G. Heier, S. Takayama. Effective degree bounds for generalized Gauss map images. *Adv. Stud. Pure Math.*, 2014 (in press).
- G. Heier. Uniformly effective boundedness of Shafarevich Conjecture-type. *J. Reine Angew. Math.*, 674:99–111, 2013.
- G. Heier, B. Wong. Scalar curvature and uniruledness on projective manifolds. *Comm. Anal. Geom.*, 20(4):751–764, 2012.
- G. Heier, M. Ru. On essentially large divisors. *Asian J. Math.*, 16(3):387–408, 2012.
- G. Heier, S. Takayama. On uniformly effective birationality and the Shafarevich Conjecture over curves. arXiv:1105.3439.
- G. Heier, S. S. Y. Lu, B. Wong. On the canonical line bundle and negative holomorphic sectional curvature. *Math. Res. Lett.*, 17(6): 1101–1110, 2010.
- G. Heier. Existence of Kähler-Einstein metrics and multiplier ideal sheaves on del Pezzo surfaces. *Math. Z.*, 264(4):727–743, 2010.
- G. Heier. Convergence of the Kähler-Ricci flow and multiplier ideal sheaves on del Pezzo surfaces. *Michigan Math. J.*, 58(2):423–440, 2009.
- G. Heier. Finite type and the effective Nullstellensatz. *Comm. Algebra*, 6(8): 2947–2957, 2008.
- G. Heier. Effective finiteness theorems for maps between canonically polarized compact complex manifolds. *Math. Nachr.*, 278(1-2):133–140, 2005.
- G. Heier. Uniformly effective Shafarevich Conjecture on families of hyperbolic curves over a curve with prescribed degeneracy locus. *J. Math. Pures Appl. (9)*, 83(7):845–867, 2004.
- G. Heier. Effective freeness of adjoint line bundles. *Doc. Math.*, 7:31–42, 2002.