

Versa Steel, Inc.  
1618 NE 1st Ave.  
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U.S.A.

Citizenship: U.S.A.

Bernard A. Mares  
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<http://tensorial.com/math>

## Curriculum Vitæ

### Bernard “Ben” A. Mares, Jr.

#### Employment

*2015-Present* Vice President, Versa Steel, Inc.  
*2012-2015* Postdoctoral Fellow, Scuola Internazionale Superiore di Studi Avanzati (SISSA)  
*2010-2012* Britton Postdoctoral Fellow, McMaster University

#### Education

*2004-2010* Massachusetts Institute of Technology, Mathematics Ph.D, advisor: Tomasz Mrowka.  
(Cambridge, MA)  
*1999-2004* Brown University, Sc.B. Mathematics-Physics with Honors, *Magna Cum Laude*.  
(Providence, RI)

#### Research Interests

Gauge theory, geometric analysis, four-manifolds, quantum field theory, Vafa-Witten theory, Chern-Simons theory, vortex equations

#### Professional activities

*Spring 2014* Co-organizer, Poster session for International Scientific Advisory Committee (ISAC) (SISSA)  
*Summer 2011* Problem sessions, Instantons, Knots and Khovanov master class by Tom Mrowka (Århus University)  
*Fall 2011* Organizer, Geometry & Topology seminar (McMaster University)  
*Spring 2011* Co-organizer, Reading seminar on “Mathematicians Learn Quantum Field Theory.” (McMaster University)

#### Papers/Preprints

B. Mares, *Generalizations of the Seiberg-Witten equations*, (in progress).  
B. Mares, *Radially symmetric solutions of both the critical and the non-magnetic Ginzburg-Landau equations*, (in progress).  
B. Mares, *Some analytic aspects of Vafa-Witten twisted  $\mathcal{N} = 4$  supersymmetric Yang-Mills theory*, Ph.D. thesis, MIT (2010).

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D. Borwein, J. M. Borwein, and B. Mares, *Multi-variable sinc integrals and volumes of polyhedra*, Ramanujan J. 6 (2002), 189-208.

### Invited research talks

- April 15, 2015*    *Appearance of Painlevé II and III in profiles of radially symmetric fields.* Integrable Systems Seminar. (SISSA)
- January 29, 2014*    *Relations among Donaldson invariants.* Integrable Systems Seminar. (SISSA)
- May 14, 2011*    *Some analytic aspects of Vafa-Witten twisted  $\mathcal{N} = 4$  supersymmetric Yang-Mills theory.* Conference on Connections in Geometry and Physics GAP 2011. (Fields Institute)
- Jan. 26, 2011*    —. Pure Math Department Geometry & Topology Seminar. (University of Waterloo)
- Dec. 17, 2010*    —. Symplectic Geometry, Gauge Theory, and Categorification Seminar. (Columbia University)
- Sept. 30, 2010*    —. Geometry & Topology Seminar. (McMaster University)

### Awards

- 2010*    Britton Postdoctoral Fellowship
- 2004*    National Defense Science and Engineering Graduate Fellowship
- 2004*    National Science Foundation Graduate Research Fellowship
- 2004*    R. Bruce Lindsay Prize for Excellence in Physics, from the William Gaston Premium Scholarship, (awarded for the top two physics theses)
- 2002*    Barry M. Goldwater Scholarship

### Teaching Experience

- Winter 2015*    *Lecturer*, Gauge theory and smooth invariants (SISSA)
- Winter 2013*    *Lecturer*, Gauge theory and smooth invariants (SISSA)
- Spring 2012*    *Lecturer*, 4B03/6B03–Calculus on Manifolds. (McMaster)
- Fall 2011*    *Lecturer*, 1ZA3–Engineering calculus I. (McMaster)
- Spring 2011*    *Lecturer*, 1ZB3–Engineering calculus II. (McMaster)
- Fall 2010*    *Lecturer*, 1ZA3–Engineering calculus I. (McMaster)
- Spring 2009*    *Student*, “Teaching College-Level Science and Engineering.” (MIT)

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*Spring 2009*      *Teaching Assistant, 18.03–Differential Equations. (MIT)*  
*Fall 2008*      *Tutor, Office of Minority Education, Tutorial Services Room. (MIT)*  
*Fall 2007*      *Teaching Assistant, 18.06–Linear Algebra. (MIT)*

## References

Tomasz Mrowka	MIT (Ph.D. advisor)	mrowka@math.mit.edu
Alessandro Tanzini	SISSA	tanzini@sissa.it
Ian Hambleton	McMaster	hambleton@mcmaster.ca
McKenzie Wang	McMaster	wang@mcmaster.ca
Aaron Childs	McMaster (teaching)	childs@mcmaster.ca