

## CV for Thomas Huber

### **a. Professional Preparation**

St. John's University, Collegeville, MN, Physics and Math/Computer Science, B.S. 1983

University of Wyoming, Laramie, WY Physics, Ph.D. 1989

Thesis: Search for Mixing of Muonium and Antimuonium

### **b. Appointments**

#### **Assistant, Associate & Full Professor, Gustavus Adolphus College (September 1989-Present)**

Undergraduate Physics Courses and Labs Including: Cosmic Universe, Classical Physics I; Classical Physics II; Modern Physics; Quantum Universe; Electronics I & Lab; Electronics II & Lab; Experimental Modern Physics Lab; Mechanics; Advanced Mathematical Methods in Physics; Nuclear Physics & Lab; Quantum Mechanics; Statistical and Thermal Physics; Senior Seminar in Physics. Undergraduate General Education and Service Courses and Labs including: Physics of Sound & Music; How Musical Instruments Work; General Physics; Energy: Where are We and What's Next (First Term Seminar, Three Crowns Curriculum and January Term variations); Introduction to Cosmology; Fortran for the Physical Sciences; Scientific Programming in Matlab and C; Robotics Workshop.

#### **Research Assistant, University of Wyoming (July 1986 – September 1989)**

Thesis experiment at the TRIUMF accelerator in Vancouver, British Columbia, Canada. Performed extensive work with muon beams, nuclear detectors and electronics, ultrahigh vacuum systems, surface science, Monte Carlo simulation and data analysis.

#### **Physics Instructor, St. John's University, Collegeville, MN (September 1985-May 1986)**

Undergraduate Physics Courses and Labs Including: Foundations of Physics II; Foundations of Physics III; Mechanics; Digital and Analog Electronics Lab. Undergraduate General Education Course: Physics of Music.

### **c. Sample Publications**

Over 30 Refereed Publications, and numerous conference presentations and proceedings papers

N.R. Huber, T.M. Huber, M.T. Huber, *Optical imaging of propagating Mach cones in water using refracto-vibrometry*, J. Acoust. Soc. Am. **141**(3), EL239 (2017).

T.M. Huber, N.M. Beaver, J.R. Helps, *Noncontact Modal Excitation of a Classical Guitar Using Ultrasound Radiation Force*, Experimental Techniques **37**(4), 38-46 (2013)

T.M. Huber, M. Fatemi, and J.F. Greenleaf, *Vibroacoustic system for vibration testing*, US Patent 7987718, (2011).

T. M. Huber, B. C. Abell, D. C. Mellema, M. Spletzer, and A. Raman, *Mode-selective noncontact excitation of microcantilevers and microcantilever arrays in air using the ultrasound radiation force*, Appl. Phys. Lett. **97**, 214101, (2010).

T.M. Huber, M. Fatemi, R. Kinnick, and J. Greenleaf, *Noncontact modal analysis of a pipe organ reed using airborne ultrasound stimulated vibrometry*, J. Acoust. Soc. Am. **119** (4), 2476-2482 (2006).

T.M. Huber, A. Adamczak, J.M. Bailey, G.A. Beer, J.L. Beveridge, B.P. Ellerbusch, M.C. Fujiwara, R. Jacot-Guillarmod, P. Kammel, S.K. Kim, P.E. Knowles, A.R. Kunselman, G.J. Lindquist, M. Maier, V.E. Markushin, G.M. Marshall, C.J. Martoff, G.R. Mason, F. Mulhauser, A. Olin, C. Petitjean, T.A. Porcelli, J. Wozniak, and J. Zmeskal, *Time-of-flight studies of emission of  $\mu\tau$  from frozen hydrogen films*,

Hyperfine Interactions **118**, 159 (1999).

T.M. Huber, G.A. Beer, T. Bowen, C.A. Fry, P.G. Halverson, B. Heinrich, A.C. Janissen, K.R. Kendall, A.R. Kunselman, G.M. Marshall, G.R. Mason, K. Myrtle, A. Olin, and J.B. Warren, *Search for mixing of muonium and antimuonium*, Physical Review D **41**, 2709 (1990).

T.M. Huber, G.A. Beer, T. Bowen, C.A. Fry, Z. Gelbart, P.G. Halverson, A.C. Janissen, K.R. Kendall, A.R. Kunselman, G.M. Marshall, G.R. Mason, A. Olin, and J.B. Warren, *Search for mixing of  $(\mu^+ e^-)$  and  $(\mu^- e^+)$  with Fermi coupling strength*, Physical Review Letters **61**, 2189 (1988).

#### **d. Recent Grants**

**11 Grants from National Science Foundation, with total exceeding \$1.6 Million**

**RUI: Detection of ultrasound waves in water and air using a laser interferometer**

NSF, \$200,000 (2016-2019)

**Collaborative Research: Enabling Non-contact Structural Dynamic Identification with Focused Ultrasound Radiation Force**

NSF, with P. Avitabile, C. Niezrecki, X. Wang (University of Massachusetts, Lowell)  
\$204, 918 (Gustavus), \$313,407(UMass-Lowell) (2013-2016)

**RUI: Excitation of Macro and Micro Cantilevers Using Ultrasound Radiation Force**

NSF, Research at Undergraduate Institutions  
\$219, 943 (2009-2014)

**MRI-R2: Acquisition of a Scanning Laser Doppler Vibrometer System**

NSF, Major Research Instrumentation  
\$310,000 (2010-2013)

#### **e. Synergistic Activities**

Service on many committees at Gustavus Adolphus College including Physics Department Chair, Director of Undergraduate Research and Kendall Center Faculty Associate for Undergraduate Research, Faculty Senate Compensation Subcommittee, Faculty Development Committee (Chair), International and Domestic Programs Committee (Chair), Curriculum Committee, Academic Operations Committee (Co-Chair), Information Technology Advisory Committee (Chair), Nobel Conference Organizing Committee and Faculty Host

Many presentations at ASA, SEM, IMAC, IEEE and ASME conferences.

The video “Ultrasonic Wave Propagation Measured with Refracto Vibrometry” was the grand prize winner in Gallery of Acoustics at the May 2018 Acoustical Society of America Meeting. <https://tcspasa.org/gallery-of-acoustics>. YouTube channel <http://www.youtube.com/user/HuberPhysics> has videos showing vibrations of guitars, microcantilevers and sound fields using scanning vibrometer.

Prepared curriculum guides and gave presentations for NSF funded project: Faculty Professional Development in Design, Construction, Assembly and Analysis of a solid body electric guitar (Award: DUE-0903336). See curriculum tab at [www.guitarbuilding.org](http://www.guitarbuilding.org). Presenter at Purdue Guitar Workshop, Summers 2007-10; Gave presentations at the Purdue Guitar workshop on “Fundamentals of How Electromagnetic Pickups Work” and “Physics of the Guitar”