

Name: Robert Edward Breidenthal, Jr.

Department: Aeronautics and Astronautics

Date of Birth: October 9, 1951

Academic Positions: Post-Doctoral Research Fellow, Caltech - 1978-1980
Research Assistant Professor, UW- 1980-1983
Assistant Professor, UW - 1983-1987
Associate Professor, UW - 1987-1997
Professor, UW - 1997-

Degrees: B.S.A.E., Wichita State University, 1973
M.S., California Institute of Technology, 1974
Ph.D., California Institute of Technology, 1979

Number of Years Service on this Faculty: 31 years: August 1, 1980

Full-time Industrial: Boeing Aerospace Company, summer 1983
Asea Brown Boveri, Switzerland, summer 1989

Consulting Work: Boeing Aerospace Company, Flow Research, U.S. Gypsum, Arco Alaska, Rocket Research, Rocketdyne, Learjet, Peerless Mfg., Vornado, ABB, Mallen Research, TRU, Battelle, Martrawl, Homax, Metro, Engineering Ventures Northwest, Ellen Sollod Studio, Merkt Studio, Vaughan Company, CH2M Hill, Airlift Northwest, Rangehut, Cessna Aircraft, DB Western, Viper Tee, PACCAR, Ramgen, Pterofin, ClearSign Combustion.

Honors and Awards: Sigma Gamma Tau, 1972
Tau Beta Pi, Academic Honors, Wichita State University, 1969-73
Valedictorian, 1973
Earl R. Hutton Scholarship in Aeronautical Engr., 1969-73
National Science Foundation Graduate Fellowship, 1973-76
Donald W. Douglas Graduate Fellowship in Aero. 1973-78
Outstanding Professor Award, AA Dept. 1994, 2011
Tan Chin Tuan Visiting Professor, NTU, Singapore 2005

Selected Publications:

A simple model of mixing and chemical reaction in a turbulent shear layer, J.E. Broadwell & R.E. Breidenthal 1982 *J. Fluid Mech.* **125** 397-410.

The turbulent exponential jet, R.E. Breidenthal 1986 *Phys. of Fluids* **29**(8) 2346-2347.

Laboratory experiments on the cloud-top entrainment instability, S. Shy & R.E. Breidenthal 1990 *J. Fluid Mech.* **214** 1-15.

Mixing of jets in confined volumes, R.E. Breidenthal, V.R. Buonadonna, & M.F. Weisbach 1990 *J. Fluid Mech.* **219** 531-544.

Sonic eddy - A model for compressible turbulence, R.E. Breidenthal 1992 *AIAA J.* **30**(1) 101-104, and AIAA-90-0495, Reno, Nevada, January 1990.

Flow into a black hole," D. Tordella & R.E. Breidenthal 1996 *Int. J. Modern Phys. A*, **11**(1) 161-170.

Laboratory experiments of a jet impinging on a stratified interface, A.J. Cotel, J.A. Gjestvang, N.N. Ramkhelawan & R.E. Breidenthal 1997 *Exp. Fluids* **23** 155-160.

Turbulent stratified entrainment and a new parameter for surface fluxes, R.E. Breidenthal 1999 *Recent Research Developments in Geophysical Research*, S.G. Pandalai Ed., Research Signpost, Trivandrum, India, August 1999.

Vortex persistence - A recent model for stratified entrainment and its application to geophysical flows, A.J. Cotel & R.E. Breidenthal 1999 *Geophysical Flows*, Kluwer.

Non-stationary entrainment and tunneling eruptions: A dynamic template for eruption processes and magma mixing, G.W. Bergantz & R.E. Breidenthal 2001 *Geophysical Research Letters* **28** 3075-3078.

Stationary vortices and persistent turbulence in Karman grooves, G.J. Balle & R.E. Breidenthal 2002 *Journal of Turbulence* **3** 33-51.

The vortex as a clock, R.E. Breidenthal, 2003 *Advances in Fluid Mechanics*, M. Alam, R. Govindarajan, O.N. Ramesh, & K.R. Sreenivas Eds., Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India.

Elements of entrainment, R.E. Breidenthal 2006 *Turbulencia, Escola de Primavera em Transicao e Turbulencia*, ed. A.P. Silva Freire, A. Ilha, and R.E. Breidenthal, ABCM, Rio de Janeiro, **5**(2) 205-221.

The effect of acceleration on turbulent entrainment, R.E. Breidenthal 2008 *Physica Scripta T* **132** 014001.