

Colloquia

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SPRING 2016

A. Baha Balantekin

University of Wisconsin-Madison, Madison, Wisconsin, USA

Neutrinos in Physics and Astrophysics

day

APR 20, 2016 WED

location

EE01

time

15:40

ABSTRACT

More than half a century after their existence was first postulated, we finally seem to be getting closer to understanding the elusive physics of neutrinos. Their seemingly very small masses and feeble interactions with ordinary matter make neutrinos rather special. For a long time very little experimental information was available about neutrino properties, even though a minute neutrino mass has intriguing cosmological and astrophysical implications. This situation has changed in recent decades: intense experimental activity to measure many neutrino properties took place, culminating in the 2015 Nobel Prize in Physics and the 2016 Breakthrough Prize in Fundamental Physics. In this talk, following a brief history of neutrino physics, recent experimental and theoretical developments in solar, atmospheric, and reactor neutrino physics will be reviewed. Implications of those experiments for nuclear/particle physics, astronomy and astrophysics will be discussed. The role of neutrinos in the dynamics of core-collapse supernovae and the origin of chemical elements will be elucidated.

A. Baha Balantekin received his B.S. from Middle East Technical University in 1975 and Ph.D. from Yale University in 1982. After working at the Massachusetts Institute of Technology and Oak Ridge National Laboratory, he joined the faculty of the University of Wisconsin-Madison where he is now the Eugene P. Wigner Professor of Physics. He served as the Chair of that Department between 2009-2011. He is also an Affiliate Professor at the University of Washington, Seattle. During the academic year 2004-2005 he was the 21st Century Center of Excellence Visiting Professor at Tohoku University, Sendai, Japan and on several occasions a visiting Professor at the National Astronomical Observatory of Japan. He is a Fellow of the American Physical Society and the Institute of Physics of United Kingdom as well as a member of the Science Academy of Turkey. Balantekin was appointed as a U.S. Presidential Young Investigator in 1987. He has received the Wisconsin Alumni Research Foundation Kellett Mid-Career Award, the Alexander von Humboldt Foundation (Germany) Senior Scientist Award, 2001 TÜBİTAK Science prize, the Distinguished Service Award of the Division of Nuclear Physics (DNP) of the American Physical Society (APS), and 2016 Breakthrough Prize in Fundamental Physics. Balantekin served as the Chair of the DNP and on the Executive Board of the APS. Between 2005 and 2009 he was the Editor-in-Chief of the Journal of Physics G published by the Institute of Physics of the United Kingdom. He has served on numerous advisory committees around the world. He chaired many of them including those for the National Institute for Nuclear Theory at Seattle, TRIUMF laboratory of Canada, Lawrence Berkeley Laboratory, and the Scientific Advisory Committee of the European Centre of Theoretical Physics at Trento, Italy.

The Physics Colloquia are designed to address a non-specialist, broad audience and introduce topics of contemporary research through lectures by leading experts. We warmly invite all members of the student body, including undergraduates enrolled in any programme.

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