BOSTON UNIVERSITY

ASTROPHYSICS SEMINAR SERIES

"Atmospheric Evolution at Venus and Mars: VeSpR, HST, and MAVEN"

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Monday, September 9, 2013
Refreshments at 3:15pm in CAS 500
Talk begins at 3:30pm in CAS 502

Abstract:
One of the outstanding scientific questions in planetary science is the "Goldilocks Problem" - Venus is too hot, Mars too cold, but the Earth is just right to harbor life as we know it. What has been the difference in evolution of the atmospheres of these planets that has given rise to the present conditions, and in particular what is the history of water on Venus and Mars? Several experiments will obtain key observations over the upcoming year(s) to address these questions, including the VEnus SPectral Rocket (VeSpR), the Hubble Space Telescope (HST), and the Mars Atmosphere Volatile EvolutioN mission (MAVEN) to Mars. VeSpR and HST are scheduled to measure the ratio of D/H in the upper atmosphere of Venus in Oct/Nov 2013, along with coordinated observations of normal and deuterated water by the Venus Express orbiter. The ratio of D/H is elevated at both Venus and Mars compared with the Earth, presumably as a result of the loss of large quantities of water into space. HST observations have already provided surprises about the extended H and O emissions from the atmosphere of Mars, and MAVEN will arrive at Mars in Sept. 2014 and begin an extended and intensive study of the details of the loss of atmospheric species to space. BU's involvement in these missions will be presented, with an eye toward what we may achieve in addressing these important questions.