

# This Week in Physics

SYRACUSE UNIVERSITY  
College of Arts & Sciences

Week of  
September 1, 2008

[http://www.phy.syr.edu/  
SeminarsEvents.htm](http://www.phy.syr.edu/SeminarsEvents.htm)

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## THURSDAY, SEPTEMBER 4

Colloquium

4:00 PM, Rm 202 (refreshments 3:30 PM, Rm 204)

Prof. Avi Loeb (Harvard, CfA)

Exploring New Physics in the Early Universe and Around Black Holes

The Universe offers environments with extreme physical conditions that cannot be realized in laboratories on Earth. These environments provide unprecedented tests for extensions of the Standard Model. I will describe two such "astrophysical laboratories", which are likely to represent new frontiers in observational astrophysics over the next decade. One provides a novel probe of the initial conditions from inflation and the nature of the dark matter, based on 3D mapping of the distribution of cosmic hydrogen through its resonant 21cm line. The second allows to constrain the metric around supermassive black holes based on direct imaging or the detection of gravitational waves. I will describe past and future observations of these environments and some related theoretical work.

## FRIDAY, SEPTEMBER 5

Joint Relativity/Cosmology/High Energy Physics Seminar

2:30 PM, Rm 202

Prof. Andrew Melatos  
(University of Melbourne)

TBA

