

You are welcome to nominate speakers to colloquium@nao.cas.cn. The video and slides of previous colloquia and more information can be found at <http://colloquium.bao.ac.cn/>.

国台学术报告 NAOC COLLOQUIUM

2018 年 第 28 次 / No. 28 2018

Time: Friday 2:30 PM, Sep.28th **Location: A601, NAOC**

Dark matter revealed by the first stars?

Prof. Rennan Barkana

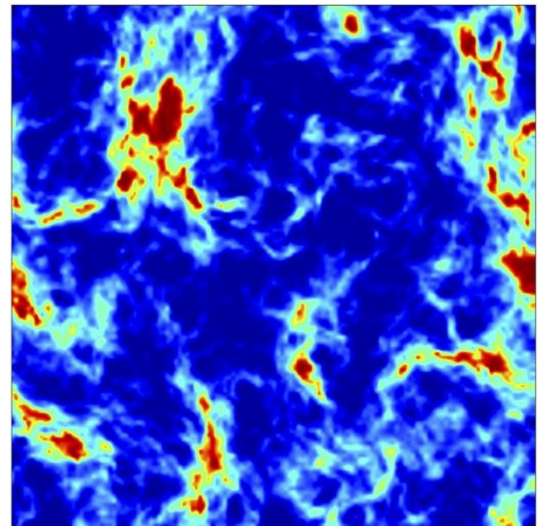
Tel Aviv University



Prof. Rennan Barkana received his Ph.D. from M.I.T. in 1997. He was a postdoc at the Institute for Advanced Study for three years followed by a year at the Canadian Institute for Theoretical Astrophysics. Since 2001 he has been a faculty member at Tel Aviv University, where he is now a full professor and head of the Department of Astrophysics. Barkana has been a Moore Distinguished Scholar at Caltech, a Leverhulme Visiting Professor at Oxford, and a Guggenheim Fellow.

Abstract

The cosmic radio spectrum is expected to show a strong absorption signal around redshift 20 that corresponds to the rise of the first stars; specifically, the stellar radiation turns on 21-cm absorption by atomic hydrogen. The EDGES global 21-cm experiment has detected the first such signal, finding a stronger absorption than the maximum expected. This absorption can be explained by invoking excess cooling of the cosmic gas induced by an interaction with dark matter. This would have far reaching consequences, including an upper limit on the mass of dark matter particles that conflicts with the expectations for WIMPs. Specific particle physics models are highly constrained, but observations will decide. In particular, we predict that 21-cm fluctuations at cosmic dawn are likely to be much larger than previously expected, exhibiting a specific signature that will be a clear test of the effect of dark matter.



All are welcome ! Tea and coffee will be served at 2:15 PM.