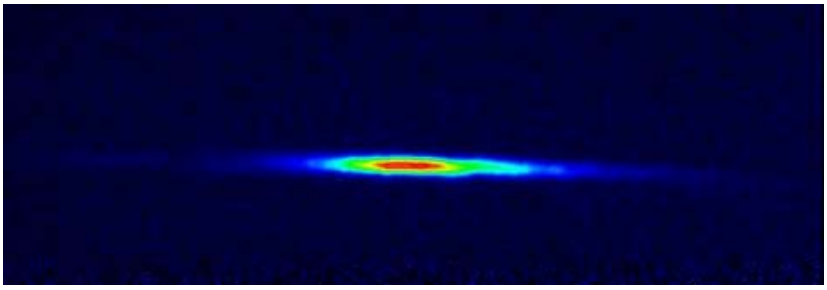
AMO Seminar

Friday, February 20, 2009
2:00 pm
Physics conference room (Small Hall 123)



Light scattering dynamics in an ultracold ^{87}Rb gas near the localization limit

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Recent developments in laser cooling and trapping opened the door to a world full of new opportunities for research in atomic, molecular and optical physics as well as condensed matter physics. It became possible to do experiments under conditions that are hard to achieve in condensed matter systems but recently have been observed in atomic systems. Bose Einstein Condensation, the Mott insulator transition, and superfluidity are examples of such achievements. Another considerable interest to both condensed matter and atomic physics is Anderson Localization of light. The localization phenomenon is named after P. W. Anderson who suggested the possibility of localization of electrons in a disordered medium (Anderson et al., 1958). Localization of light is an interference effect in a disordered medium, and there have been a number of observations in different types of medium. (Wiersma et al., 1997, Storzer et al., 2006, Aegerter et al. 2007) It is still not observed in atomic systems in 3 dimensions. We report experimental results obtained from ultracold 87Rb gas of atoms near the localization limit. I will discuss the sample formation, characterization of the sample and the progress made to achieve localization, including difficulties which so far have frustrated observation.