

Abstract Submitted
for the DAMOP06 Meeting of
The American Physical Society

Saturation Effects in Photoassociation Spectroscopy of ^{86}Sr P.G. MICKELSON, Y.N. MARTINEZ, S.B. NAGEL, T.C. KILLIAN, Rice University — This work describes intensity saturation of photoassociative transitions of ^{86}Sr at the quantum mechanical unitarity limit. The saturation behavior, which results in a roll-over of the photoassociation rate for intensities greater than the saturation intensity, is reminiscent of Landau-Zener physics. Unlike other photoassociation spectroscopy (PAS) experiments, photoassociation occurs in a magneto-optical trap operating on the narrow dipole-forbidden transition at 689 nm. A laser red-detuned from the principal atomic transition at 461 nm by as much as 1300 GHz induces the photoassociation of ground state atoms to excited molecular states. Our previous studies suggest that some of the PAS transitions for ^{86}Sr are sensitive to the intensity of the exciting laser; this work delves more deeply into these high intensity effects.

P.G. Mickelson
Rice University

Date submitted: 01 Feb 2006

Electronic form version 1.4