Abstract Submitted
for the DAMOP11 Meeting of
The American Physical Society

Trapping Rb atoms and dimmers in a broadband optical dipole trap[1] BRUNO MARANGONI, CARLOS MENEGATTI, LUIS MARCASSA, Universidade de São Paulo — Several experiments involving cold homonuclear and heteronuclear molecules rely on the photoassociation of trapped atoms. In order to obtain a large molecular sample, it is necessary to start from a dense atomic sample. In our experiment, we are trapping cold Rb atoms and Rb_2 molecules in a crossed broadband optical dipole trap. Our crossed beam configuration uses 25 W (at 1064 n, bandwidth of 2 nm) in each in each of the beams with about 50 micron waist radius of the focus and a depth of about 760 μK. Our results suggest that photoassociation of the trapped atoms due to 1064 nm laser is taking place. We have also developed a technique using a train of laser pulses to observe the time evolution of Rb_2 molecules. This train of laser pulses photoionize the Rb_2 molecules trough resonant two-photon ionization. Such technique is implemented in such way that allows us to continuously observe the molecular sample. Therefore, it allows a faster data acquisition.

[1]We acknowledge financial support from FAPESP, CNPq, INCT-IQ.

Luis Marcassa
Universidade de São Paulo

Date submitted: 27 Jan 2011 Electronic form version 1.4