

# Selective reflection study of excitation dependent dipole-dipole broadening in dense optical medium

**Bobrov A A<sup>@</sup>, Saakyan S A, Sautenkov V A and  
Zelener B B**

Joint Institute for High Temperatures of the Russian Academy of Sciences,  
Izhorskaya 13 Bldg 2, Moscow 125412, Russia

<sup>@</sup> abobrov@inbox.ru

We report on the ground state population dependence of dipole-dipole broadening in a dense alkali vapour of natural mixture of Rb isotopes. We measure spectral width of D2-line selective reflection of probe laser radiation from inner surface of the window of high-temperature Rb vapour cell. To change the ground state population we use intense pump radiation. It is shown that due the decrease in the ground state population with increasing pump laser intensity leads to the narrowing of the selective reflection spectra. At some density dependent value of the pump intensity, the spectral width reaches a plateau. We address the observed saturation of the selective reflection to optical saturation of the D2 transition. The effect can be employed to control the dipole-dipole interaction in resonant media.

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