Detection of NaRb Feshbach Molecule By Photodissociation[1]

FAN JIA, ZHICHAO GUO, LINTAO LI, DAJUN WANG, Chinese Univ of Hong Kong — We demonstrate detection of $^{23}Na^{87}Rb$ Feshbach molecule by combining molecular photodissociation and absorption imaging of the photofragments. The photodissociation process is studied by tuning the laser frequency above the Na $(3S_{1/2}, |F = 1, m_F = 1\rangle)$ to Na ($3P_{3/2}, |m_I = 3/2, m_J = 1/2\rangle)$ transition, from which we observe a shelf like dissociation lineshape. Following the dissociation, the accurate number of molecules can be obtained by detecting either the resultant Rb or Na atoms. We also studied the heating effects caused by the photodissociation laser and optimized the best detection protocol for extracting accurate information of the molecular cloud.

Fan Jia
Chinese Univ of Hong Kong

Date submitted: 31 Jan 2020   Electronic form version 1.4