

Abstract Submitted
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Feshbach resonances in ^{52}Cr - ^{53}Cr and ^{53}Cr - ^{53}Cr gas Z. PAVLOVIĆ,
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Center for Astrophysics — We present calculations of Feshbach resonances in the
ultra-cold boson-fermion and fermion-fermion mixtures in a chromium gas. In the
bosonic chromium-chromium collision, the Feshbach resonances are determined by
magnetic dipolar interaction of atoms in the ground state with a large magnetic
moment, $6\mu_B$, while the presence of a fermionic, ^{53}Cr , component leads to resonances
due to hyperfine interaction term, whose constant is $A = -80.6$ MHz. Apart from
mapping the position and width of resonances, we also follow the behavior of the
vibrational levels in the magnetic field. The results are obtained through coupled-
channel quantum calculations that utilize exact solutions of the Schrödinger equation
for the $1/r^6$ potential and frame transformation to hyperfine states.

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