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Impact of Hyperfine Repumping during Sub-Doppler Cooling with Large Detuning in ^{87}Rb[1] REBEKAH FERRIER, JACOB ROBERTS, Colorado State University — As part of our investigation into long-range disruptive collisions during optical trap loading, we have developed a 1-D Quantum Monte Carlo code to simulate $\sigma^+ - \sigma^-$ sub-Doppler cooling that includes hyperfine repumping. At the relatively large cooling laser detunings and low hyperfine repump powers appropriate for optimal optical trap loading conditions, we found that the polarization properties of the hyperfine repump light play a significant role during the cooling, including the relative polarization between the cooling and repump light fields. The results of our simulations will be described.

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