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Dual Species NMR Oscillator JOSHUA WEBER, ANNA KORVER, DANIEL THRASHER, THAD WALKER, University of Wisconsin - Madison — We present progress towards a dual species nuclear magnetic oscillator using synchronous spin exchange optical pumping. By applying the bias field as a sequence of alkali 2π pulses, we generate alkali polarization transverse to the bias field. The alkali polarization is then modulated at the noble gas resonance so that through spin exchange collisions the noble gas becomes polarized. This novel method of NMR suppresses the alkali field frequency shift by at least a factor of 2500 as compared to longitudinal NMR. We will present details of the apparatus and measurements of dual species co-magnetometry using this method. Research supported by the NSF and Northrop-Grumman Corp.

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