

Abstract Submitted
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Optics for Nuclear Spin Polarization¹ SCOTT SMALE, SFU, JOHN BEHR, TRIUMF, SPENCER BEHLING, Texas A&M, ALEXANDER GORELOV, TRIUMF, MELISSA ANHOLM, UBC — At TRINAT (TRIumf Neutral Atom Trap) the current goal is a precision measurement of the angular asymmetry of beta particles with respect to the nuclear spin, A_β , from the beta decay of ^{37}K nuclei. To measure beta asymmetry to 10^{-3} accuracy the nuclear spins of the atoms in the trap must be spin polarized in the same direction to at least the same degree of accuracy. To achieve this level of spin polarization the degree of circular polarization of the pumping light must also be very good, with Stokes parameter S_3 better than 0.999. There are two challenges: creating well circularly polarized light and transmitting it to the cloud in the center of the experimental chamber. My talk will discuss these challenges in the context of our experiment.

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