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Toward Searches for Electric Dipole Moments of Radium SUBHADEEP DE, UMAKANTH DAMMALAPATI, KLAUS JUNGMANN, ARAN MOL, LORENZ WILLMANN, KVI, Rijksuniversiteit Groningen — Within the TRIμP (**T**rapped **R**adioactive isotopes μicro - laboratories for fundamental **P**hysics) programme we are performing experiments searching for violation of discrete symmetries (**P**arity (**P**), **T**ime reversal (**T**) and **C**harge conjugation (**C**)) in fundamental interactions. This allows to test various possible extensions to the standard model of the electro-weak interactions. In particular we are searching permanent electric dipole moment (edm) which violates both P and T. The radium (Ra) isotope (^{213}Ra) offers several orders of magnitude ($\cong 10^4$) enhancement of an edm signal compare to any other system due to their atomic structure [1]. Laser cooling and trapping is an essential tool to increase sensitivity of such an experiment. Possible laser cooling schemes for radium involve leaky cooling transitions. Magneto optical trapping of atoms with a leaky transition requires improvement of the known cooling techniques. As an example we demonstrate laser cooling of barium. We successfully slowed barium atoms from a thermal atomic beam.

[1] V. A. Dzuba et al., PRA 61, 062509, (2000)

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