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Polarization of metastable 129Xe TIAN XIA, STEVEN MORGAN, YUAN-YU JAU, WILLIAM HAPPER, Princeton University — We have measured atomic polarization of metastable 129Xe in a pyrex cell by optical pumping, while metastability exchange optical pumping of 3He is routinely done. The atomic polarization of metastable Xe is on the order of 10%. Metastable xenon is created by electrodeless rf discharge. The hyperfine transition of metastable 129Xe is observed by microwave excitation. Atomic polarization can be demonstrated by comparison of the intensities of the transitions between different Zeeman sublevels, while pumping a specific optical transition of metastable Xe with circularly polarized light. This work offers insight into attempts to polarize 129Xe nuclei by metastability exchange optical pumping.

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