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Precession in a laboratory model of the Earth's core SANTIAGO TRIANA, DANIEL ZIMMERMAN, Department of Physics and IREAP, University of Maryland, DANIEL LATHROP, Department of Physics, IREAP and IPST, University of Maryland — The Earth's rotation axis precesses with a period of 25800 years, caused mainly by the combined torques of the sun and the moon acting on the slight equatorial bulge of the planet. Without precession (or convection), a viscous core will come to rotate as a solid body with the mantle. The fluid core responds to the precessional forcing and the resulting motion can in principle power the geodynamo. There have been several attempts, both theoretical and experimental, to unveil the role of precession in the motion of the fluid core. A three meter diameter spherical-Couette system with a 1m inner sphere is the most recent and largest experimental model of the Earth's core. The experiment provides data at parameter ranges much closer to the Earth's compared to what was possible before either experimentally or numerically. Experimental data from this system evidencing precessional forcing will be presented and compared to theoretical predictions.

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