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Wear Testing of Motion in an Ultra-High Vacuum TORY MCALISTER, A. SHORT, R. ELLIS, M. MOSLEH, PPPL-Howard University — Mechanical motion in an Ultra High Vacuum (UHV) has been a challenge in fusion experiments due to the evaporation of lubricants and the excessive wear on the metals used because of out-gassing. We are designing a machine to test the wear and friction of smooth and textured surfaces of metals while also measuring the capabilities of various bonded and vacuum compatible lubricants in an UHV environment. Results from the current experiment are still to come but previous experiments have shown that metals with textured surfaces and metal- based lubricants show promise of handling the harsh environmental conditions. This poster describes the design of the wear testing machine and its operating parameters. Anti-friction and anti- wear treatments are discussed.

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