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Wear Testing of Moving Components in Ultra-High Vacuum ARNELIA SHORT, T. MCALISTER, R. ELLIS, M. MOSLEH, PPPL-Howard University — Wear and friction in moving parts in an Ultra-High Vacuum (UHV) environment is a fundamental challenge in the design of mechanical assemblies in fusion experiments. In a reactor-scale experiment, constraints have been placed on the material choices and mechanical motions within the system due to their vacuum environment. Wear and friction only serve to complicate these constraints. Textured surfaces, bonded lubricants, and vacuum compatible greases have shown promise as possible means of reducing friction and wear. We have designed a machine for testing wear in a UHV environment, at room temperature, and elevated temperatures. This poster describes the design of the wear test machine and its operating parameters. We have presented an outline of the material test program along with a discussion of the pros and cons of anti-friction and anti-wear treatments.

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