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Status of the QPS Project[1] J.H. HARRIS, J.F. LYON, Oak Ridge National Laboratory, QPS TEAM — The Quasi-Poloidal Stellarator (QPS) is designed to test key physics issues at plasma aspect ratios 1/2-1/4 of other stellarators. QPS has a quasi-poloidal (linked-mirror-like) rather than quasi-toroidal (tokamak-like) magnetic configuration, which allows poloidal flows and flow shear a factor of $\sim$10 larger than in other toroidal confinement systems, and very low effective ripple to reduce neoclassical transport. It is the only toroidal device stable to drift wave turbulence over a range of temperature and density gradients and has a large fraction of trapped particles in regions of low/favorable field line curvature, which strongly reduces the drive for some trapped-particle instabilities. QPS has highly accurate coil winding forms that are cast and machined, conductor wound directly onto the winding forms, a vacuum-tight cover welded over each coil pack, coils vacuum pressure impregnated, and the winding forms bolted together to form a structural shell inside the vacuum vessel. Nine independent controls on the coil currents permit varying key physics features by a factor 10–30: the degree of quasi-poloidal symmetry, poloidal flow damping, neoclassical transport, stellarator/tokamak shear and trapped particle fraction. The current status of the project will be presented.

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