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**Fermi liquid theory for thin $^3$He films** DAVID LI, ROGER ANDERSON, MICHAEL MILLER, Washington State University — We study the thermodynamic response and collective excitations in thin $^3$He films with nonzero polarization. By utilizing results from existing spin susceptibility and specific heat measurements for $^3$He adsorbed on graphite substrates and also in thin $^3$He – superfluid $^4$He films, we determine $s$-wave and $p$-wave effective interaction components. We can then use Fermi liquid theory to compute state-dependent Landau parameters. We show results for the density and polarization dependence of the effective mass, spin susceptibility, heat capacity, and compressibility for thin $^3$He films. We discuss the zero sound and spin-zero sound solutions of Landau's kinetic equation including contributions up to the L = 3 angular momentum components. In particular, we study features in the oscillation amplitudes of the two Fermi surfaces at finite polarization.

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