Suppression of $T_c$ by Medium Effects from Dilute to Dense Regime: A Crossing-symmetric Approach$^1$ KHANDKER QUADER, RENYUAN LIAO, Department of Physics, Kent State University — We study medium effects on superfluid transition temperature of 1- and 2-component strongly correlated Fermi systems. A crossing-symmetric approach allows us to explore this across dilute and dense regimes within a single framework. We include many-body effects such as density, spin-density, and current fluctuations. Pairing interactions are deduced from scattering amplitudes in the pairing channel. For 2-component systems, we find the known factor-of-2 suppression in $T_c$ to be robust across both regimes, except near the unitarity limit, where the suppression is more pronounced. For the 1-component case, the suppression can be greater, and not universal across the regimes. We discuss possible physical causes for the $T_c$ suppression.

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