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Vapor-liquid coexistence of patchy attractive fluids: Wertheim theory study HONGJUN LIU, SANAT KUMAR, Columbia University, GLENN EVANS, Oregon State University — Our system consists of spherical particles whose pair potential contains hard core repulsion, short-ranged square well attraction and several distributed attractive patches on its surface. The simplicity of the model makes it possible to compare simulations and theoretical predictions based on Wertheim's thermodynamic perturbation theory (TPT). Wertheim's TPT is in good agreement with simulation data. In the broader parameter ranges, we show the patchy hard sphere fluids obey a generalized law of corresponding states (GLCS) and GLCS seems to hold for all patchy square well fluids with four to six interaction sites.

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