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Screening in anisotropic superfluids and the superfluid density in underdoped cuprates MATTHEW CASE, IGOR HERBUT, Simon Fraser University — The effects of quantum and classical phase fluctuations on the superfluid density of underdoped cuprates can be modeled by an anisotropic system of Coulomb interacting bosons. In such a system, the collective excitations screen the Coulomb interaction whose effective strength, together with the strength of the anisotropy, determines the temperature dependence of the superfluid density. We will argue that the underdoped cuprates are in the short-ranged, weakly interacting regime characterized by an approximately linear superfluid density.

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