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Competing Order and Asymmetric Tunnelling Spectrum KANGJUN SEO, JIANGPING HU, Purdue University — We argue that the asymmetric tunneling spectrum observed in the Cuprate superconductors stems from the existence of a competing order. The cempetition between the competing order and superconductivity can create an charge depletion region near the surface. The asymmetric response of the depletion region as the function of the external voltage causes the asymmetric tunneling spectrum. The effect is very general in a system which is near the phase boundary of two competing orders favoring different carrier densities. We show that the asymmetry of the point-contact spectroscopy of the heavy fermion superconductor $CeCoIn_5$ is another example of this effect.

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