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**Calculation of the pairing temperature  $T_c$  and the gap function in electron-doped cuprates** DHANANJAY DHOKARH, ANDREY CHUBUKOV, UW-Madison, Physics — Using a spin-Fermion model, and applying an Eliashberg-type theory to electron-doped cuprates at quantum criticality, we calculate the pairing transition temperature  $T_c$ , and the gap function  $\Delta(\vec{k}, \omega_n)$  for  $T < T_c$ . We carry out the calculation with a frequency dependent interaction, mediated by spin fluctuations exchange. We argue that for near-critical electron-doped cuprates, the geometry of the problem is such that the Fermi surface curvature plays an important role in the calculation of the polarization bubble  $\Pi$ , the fermionic self energy  $\Sigma$ , as well as the anomalous self energy  $\Sigma_{02}$ . For  $T < T_c$  the polarization  $\Pi$  also depends on  $\Delta(\vec{k}, \omega_n)$ . As an advantage over previous works, vertex corrections are also included in our calculations. We show that vertex corrections actually give rise to a larger  $T_c$  and explain why. For  $T < T_c$ , we obtain a gap function  $\Delta(\vec{k}, \omega_n)$  that is non-monotonic along the Fermi-surface, but monotonically decreases as a function of frequency  $\omega_n$ . We find that the ratio of the maximum of  $\Delta$  to  $T_c$  is around 1.8 without vertex corrections; with the corrections it is around 4.

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