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Relation between weak-wide pseudo gap effect and spin fluctuations in electron doped cuprate $\mathbf{Pr_{1-x}LaCe_xCuO_4}$ DONGJOON SONG, SEUNGRYONG PARK, SUNGKYUN CHOI, CHUL KIM, YEONGKWAN KIM, W.S. JUNG, Y.Y. KOH, CHANGYOUNG KIM, Institute of Physics and Applied Physics, Yonsei University, Seoul, Korea, H. EISAKI, Y. YOSHIDA, Advanced Industrial Science and Technology, Tsukuba, Japan — Magnetic behavior of electron doped cuprate $Pr_{1-x}LaCe_xCuO_4$(PLCCO) is different from that of typical electron doped cuprates such as $Nd_{2-x}Ce_xCuO_4$(NCCO). Its long range anti-ferromagnetic (AFM) order disappears at a lower Ce concentration than NCCO, and spin fluctuations as well as superconductivity exist over a wide doping range. It is therefore interesting to study in detail electronic structure of PLCCO and its spin correlations. We performed angle resolved photoemission spectroscopy studies on PLCCO(x=0.09, 0.12, 0.15) to investigate the doping dependent electronic structures. Different from other electron doped cuprates, nodal bands cross the Fermi level, even for x=0.09 doped samples. That is, the hole pocket near ($\pi/2$,$\pi/2$) region survives for doping as low as x=0.09. Yet, the pseudo gap (PG) is well defined for x=0.09 and is gradually suppressed as the doping increases to x=0.15. This behavior can be attributed to coupling of electrons to a weaker AF phase fluctuation which implies a weak PG effect over a wider doping range. This is consistent with earlier neutron scattering result.

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