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Temperature and doping dependence of x-ray absorption spectral weight in $YBa_2Cu_3O_y$[1] JIUNN-YUAN LIN, Institute of Physics, National Chiao Tung University, Hsinchu 30043, Taiwan, CHUNG-YU MOU, 2Department of Physics, National Tsing Hua University, Hsinchu 30043, Taiwan, J.M. CHEN, National Synchrotron Radiation Research Center (NSRRC), Hsinchu 300, Taiwan
— The comprehensive study of the temperature dependent x-ray absorption spectroscopy (XAS) could be attributed to a dynamical spectral weight α in $YBa_2Cu_3O_y$ (YBCO). Large spectral weight changes with the temperature for both the Upper Hubbard band and the Zhang-Rice band due to dynamics of holes are experimentally found in the underdoped regime. These spectral weight changes become larger when the doping level p goes deeper into the underdoped regime, but quickly vanishes as p goes to the undoped limit. Our results clearly indicate that the pseudogap is related to the double occupancy and originates from bands in higher energies.

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