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Possible Observation of a 'Zhang-RiceTriplet': RIXS Study of Li2CuO2 TIMOTHY LEARMONTH, Boston University, CORMAC MCGUINNESS, Trinity College Dublin, PER-ANDERS GLANS, Boston University, JAMES E. DOWNES, Victoria University, THORSTEN SCHMITT, MAXlab, LAURENT C. DUDA, Uppsala University, JINGHUA GUO, ALS, Berkeley National Lab, KEVIN E. SMITH, Boston University, FANGCHENG CHOU, MIT — The electronic structure of cuprates has been of considerable interest since the discovery of high T_c superconductivity in such materials. Li_2CuO_2 consists of edge-sharing Cu-O chains, with a quasi-one dimensional crystal structure. The electronic structure, however, is regarded as quasi-zero dimensional, since the resistivity is similar along all three crystal axes, and the insulating gap is estimated at 3.2eV. We have measured the O K edge and Cu L edge XAS, SXE, and RIXS spectra of Li_2CuO_2. The results indicate the presence of Cu d-d excitations, as well as a higher energy charge transfer excitation that is tentatively identified as a two hole final state "Zhang-Rice Triplet." This identification is supported by energetic and magnetic arguments, as well as more general theoretical considerations. Supported in part by the U.S. DOE under DE-FG02-98ER45680.

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