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Local tunneling probe of low-energy Andreev states on (110) $Y_{0.95}Ca_{0.05}Ba_2Cu_3O_{7-\delta}$ thin films in an applied magnetic field[1] J.H. NGAI, Department of Physics, University of Toronto, Toronto, Canada, R. BECK, G. LEIBOVITCH, G. DEUTSCHER, Department of Physics and Astronomy, Raymond and Beverly Sackler faculty of Exact Sciences, Tel Aviv University, Tel Aviv, Israel, J.Y.T. WEI, Department of Physics, University of Toronto, Toronto, Canada — Cryomagnetic scanning tunneling spectroscopy (STS) was performed on (110)-oriented $Y_{0.95}Ca_{0.05}Ba_2Cu_3O_{7-\delta}$ thin films, in order to reveal coherence-length scale information on the symmetry of the high-T_c order parameter (OP) in a magnetic field. In zero-field at 4.2K, both spontaneously split and unsplit zero-bias conductance peaks (ZBCP) are seen in the STS spectrum. The two types of peak spectra exhibit increasing splitting in a field applied along the c-axis of the film. Both spontaneous and field-induced ZBCP splitting indicate a lifting in the degeneracy of the low- energy Andreev states, consistent with time-reversal symmetry breaking. These results are discussed within the context of the Doppler effect as well as intrinsic *vs.* field-induced complex components in the high-T_c OP.

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