



Contribution ID: 312

Type: **Talk**

## **【124】 Acoustic plasmon excitation and its doping dependence in superconducting $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$**

*Wednesday, September 1, 2021 2:45 PM (15 minutes)*

Cuprates superconductors undergo various charge states as electron or hole carriers doping into the parent charge-transfer insulators. The characters of charge dynamics are thus of great importance to understand the underlying physics behind the complex phase diagram. Using O K-edge resonant inelastic X-ray scattering, we studied the low-energy charge excitations in hole-doped superconducting  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$  and their evolution with doping in three representative doping levels. A steep dispersive excitation is unveiled, which much resembles the acoustic plasmon observed in electron-doped cuprates. While the dispersion gets only slightly steeper as doping increases, its intensity increases considerably. Our results confirm the presence of the acoustic plasmon excitation in the double-layered  $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+x}$ .

**Primary authors:** GIANNINI, Enrico (University of Geneva); PARIS, Eugenio (PSI - Paul Scherrer Institut); AS-MARA, Teguh (Paul Scherrer Institut); ZHANG, Wenliang (PSI - Paul Scherrer Institut); SCHMITT, Thorsten (Swiss Light Source, Paul Scherrer Institut); TSENG, Yi (Paul Scherrer Institut)

**Presenter:** ZHANG, Wenliang (PSI - Paul Scherrer Institut)

**Session Classification:** Condensed Matter Physics

**Track Classification:** Condensed Matter Physics (KOND)