
T_CSUH Bi-Weekly Seminar

Cavitation in Electron Fluids and the Puzzles of Photoemission Spectra in Alkali Metals

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In Person – Room 102, Houston Science Center, 4:00 p.m. – 5:00 p.m.

Sandwiches and chips will be available, first come, first served.



ABSTRACT: Angle-resolved photoemission spectra of alkali metals exhibit a puzzling, non-dispersing peak in the apparent density of states near the Fermi energy. We argue that the holes left behind a significant fraction of photoejected electrons are not wavepacket-like objects used to describe excitations of an equilibrium Fermi liquid but, instead, are relatively localized entities resulting from a photon-induced cavitation in the electron fluid. At the same time, these special localized holes can be thought of as vacancies in a transient Wigner solid. The corresponding contribution to the photoemission current is non-dispersive and is tied to the Fermi level; it exhibits certain similarities to photoemission from localized core orbitals such as the presence of recoil currents. Calculated spectra are consistent with experiment. We briefly discuss the present findings in the context of quantum measurement.

BIO: Vas Lubchenko is Professor of Chemistry and Physics at the University of Houston, and a PI at the Texas Center for Superconductivity. His research interests include phase transitions, solid-state inorganic Chemistry, and complex aggregation phenomena. Lubchenko is a recipient of the Beckman Young Investigator Award, a Sloan Research Fellowship, and NSF CAREER Award.

Persons needing assistance to attend this seminar are asked to call 713-498-9703.
