



**ΚΟΙΝΟ ΣΕΜΙΝΑΡΙΟ ΚΕΝΤΡΟΥ ΚΒΑΝΤΙΚΗΣ ΠΟΛΥΠΛΟΚΟΤΗΤΑΣ ΚΑΙ  
ΝΑΝΟΤΕΧΝΟΛΟΓΙΑΣ & ΚΕΝΤΡΟΥ ΘΕΩΡΗΤΙΚΗΣ ΦΥΣΙΚΗΣ ΚΡΗΤΗΣ /  
JOINT CCQCN -CCTP SEMINAR**

**Tuesday, 24 March 2015**

**14:15-15:15**

**2nd Floor Seminar Room of the physics department**

**Monopole correlations in holographically flavored liquids**

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**Abstract**

Given a many-body system in (2+1) dimensions with a conserved U(1) current, an interesting probe of the IR dynamics is provided by weakly gauging the current and then studying the correlation functions of magnetic monopole operators in the resulting dynamical gauge theory. This correlation function is a non-perturbative object and so is somewhat difficult to calculate using conventional techniques. We review the expected behavior of such monopole correlations in different field-theoretical states. We then turn to holography and study monopole correlations in holographic liquids with fundamental flavor, where the monopole operator is dual to a bulk particle that carries magnetic charge, permitting a simple geometric understanding. We display consistency with expected field-theoretical results. For a charge-gapped phase this requires a discussion of monopole condensation in the bulk, which turns out to be equivalent to the capping off of the bulk flavor brane. In a compressible finite-density phase we present a novel calculation of the monopole correlation in space and time.

