

**SEMINARIO**  
**Departamentos de Física Teórica I y II**  
**Universidad Complutense de Madrid**

**INVITADO:** Anna Sanpera

Universitat Autònoma de Barcelona

**TITULO:** Entanglement spectrum, critical exponents and order parameters in quantum spin chains

**LUGAR:** FACULTAD DE CIENCIAS FÍSICAS UCM

**DÍA:** 27 de junio, 2012 (Miércoles)

**HORA:** 14:30

**AULA:** Seminario Depto. Física Teórica I, Planta 3ª

**ABSTRACT**

We investigate the entanglement spectrum near criticality in finite quantum spin chains. Using finite size scaling we show that when approaching a quantum phase transition, the Schmidt gap, i.e. the difference between the two largest eigenvalues of the reduced density matrix  $\lambda_1, \lambda_2$ , signals the critical point and scales with universal critical exponents related to the relevant operators of the corresponding conformal theory describing the perturbation from the critical point. Such scaling behavior allows to identify explicitly the Schmidt gap as a local order parameter.