

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

**INVITADO:** Robin Cote

Physics Department, University of Connecticut

**TITULO:** Controlling charge exchange between atoms and ions

**LUGAR:** FACULTAD DE CIENCIAS FÍSICAS UCM

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**ABSTRACT**

In recent years, we have seen rapid progress in the manipulation of ultracold ions, both atomic and molecular. Here, we review the theoretical framework used to compute elastic and charge exchange processes in ultracold atom-ion systems, and explore in details how alkaline-earth systems could be used to control these processes. We present recent results on  $\text{Be}_2^+$ , and discuss other systems, such as  $\text{Mg}_2^+$  and  $\text{Ca}_2^+$ .