



**Conference on Long-Range Interacting Many-Body Systems:  
from Atomic to Astrophysical Scales  
(25 - 29 July 2016)**

**Venue: ICTP Leonardo da Vinci Building - Budinich Lecture Hall**  
(tel: +39 040 2240346, fax: +39 040 224163, e-mail: [smr2830@ictp.it](mailto:smr2830@ictp.it))

---

Title:  
**Rydberg molecules**

Speaker:  
**Robert LOEW**

Affiliation:  
University of Stuttgart, Germany

Abstract:

The exaggerated properties of highly excited Rydberg atoms allow also for a novel binding mechanism between a Rydberg atom and a ground state atom. The resulting long-range Rydberg molecules have become a research field on their own and several groups study Rydberg molecules with ultracold Rubidium, Cesium and Strontium atoms. By increasing the density of the atomic gas it is possible to observe a transition of trimer, tetramer and higher order states to a regime of a density shift of the Rydberg lines. Finally I will discuss inelastic collisions and how Rydberg atoms inside a Bose-Einstein condensates qualify for quantum chemistry.