

Átomos y moléculas

frías y ultrafrías

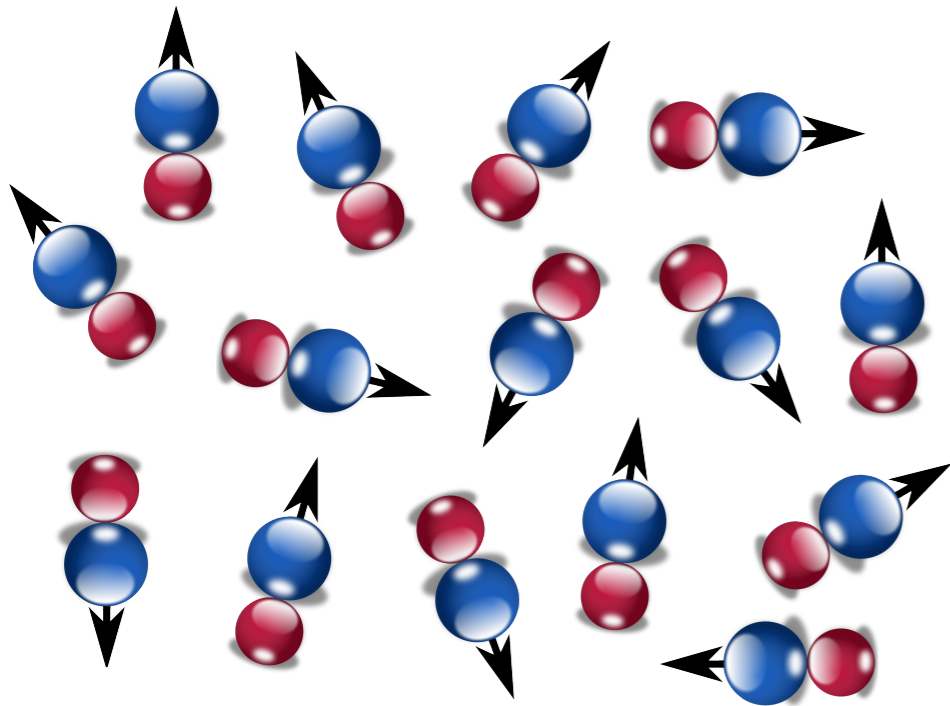
Rosario González-Férez

Universidad de Granada



Moléculas en campos externos

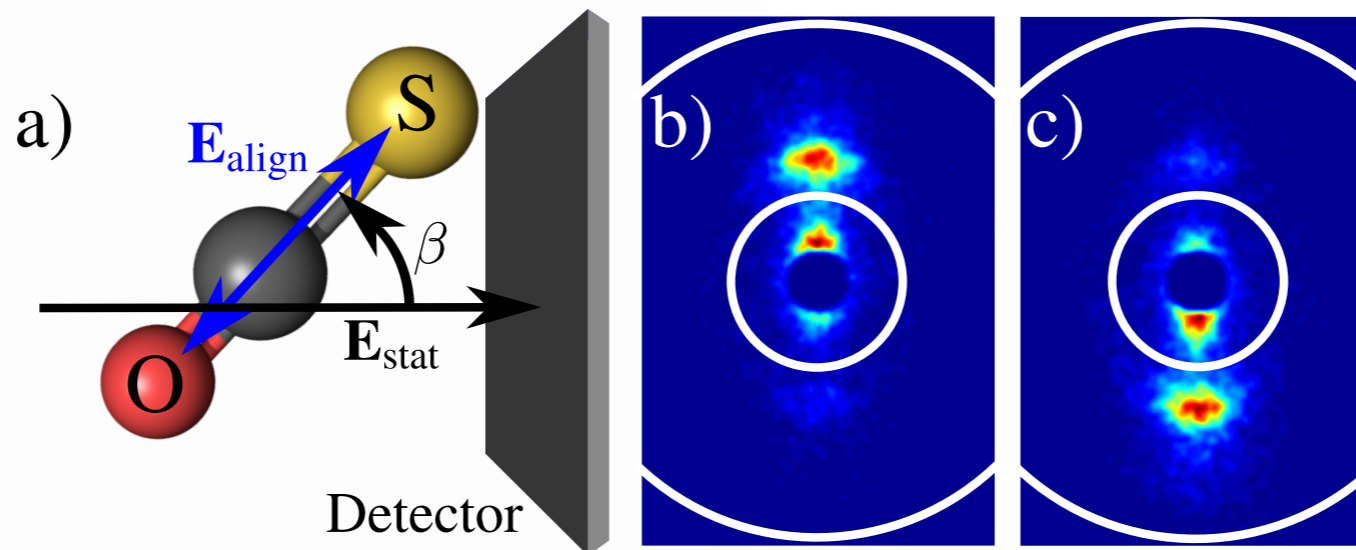
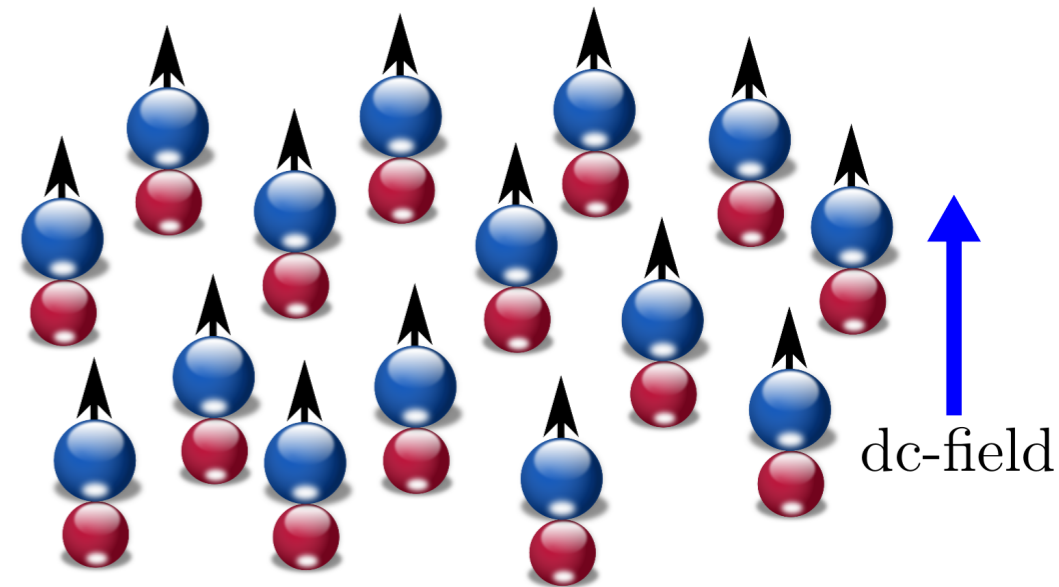
Moléculas libres



Añadiendo un campo eléctrico

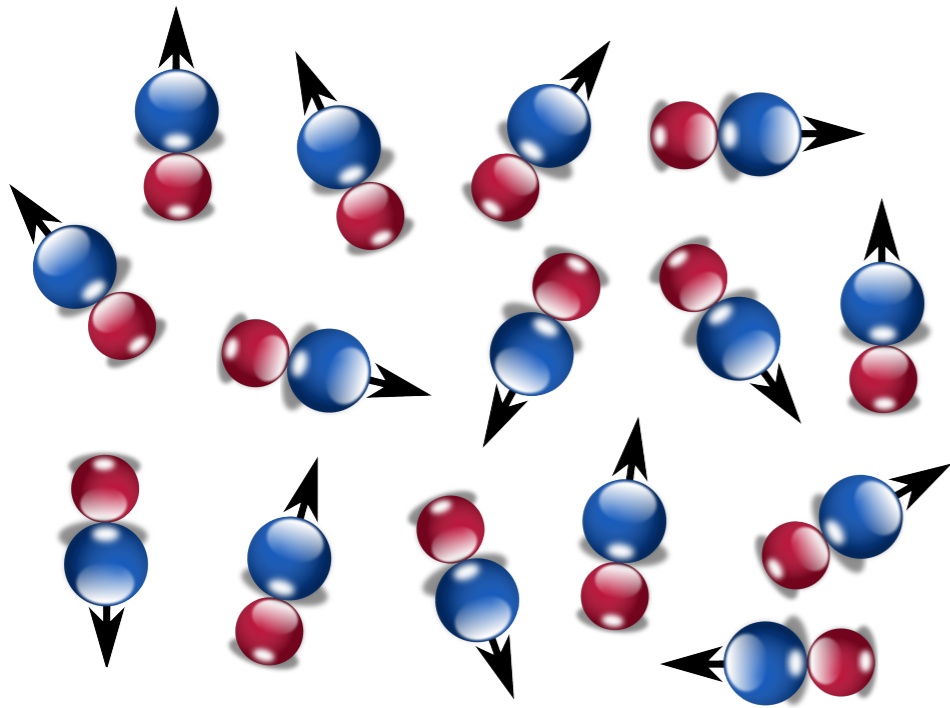


Moléculas orientadas



Moléculas en campos externos

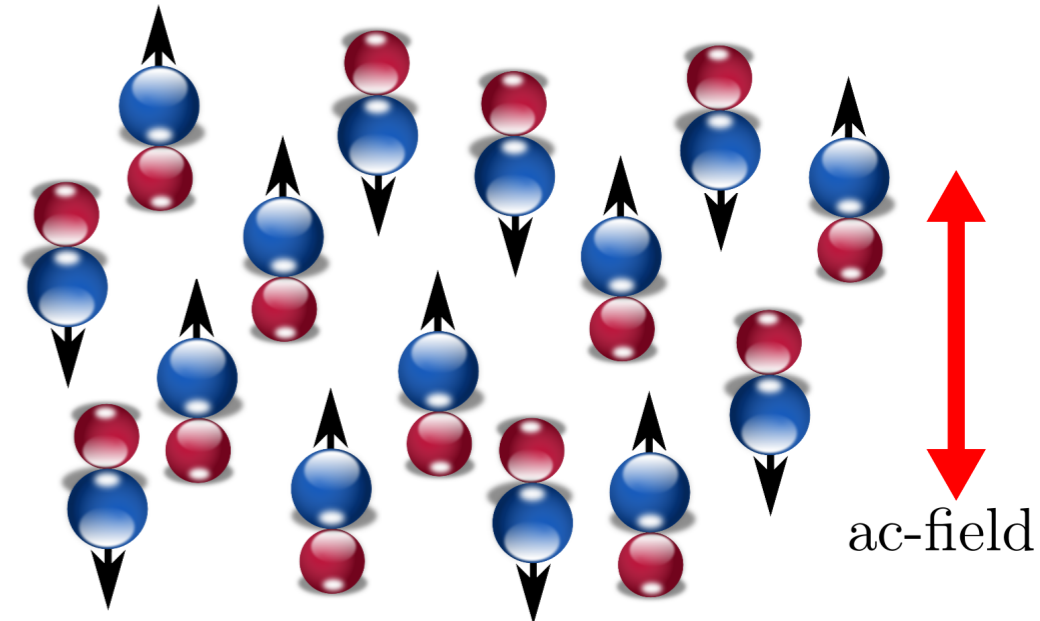
Moléculas libres



Añadiendo un
campo láser

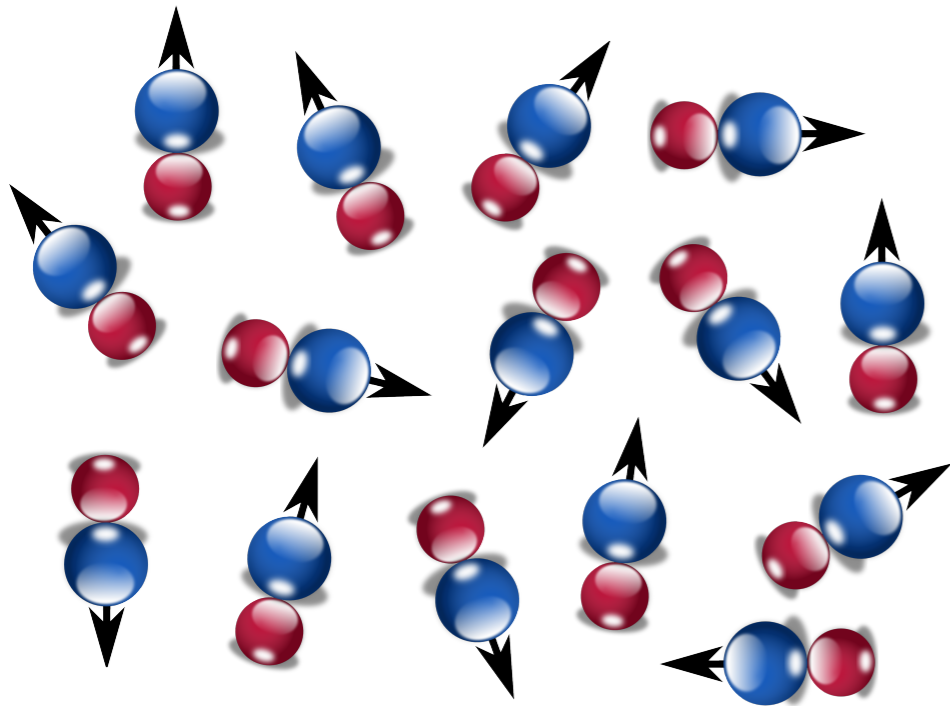


Moléculas alineadas



Moléculas en campos externos

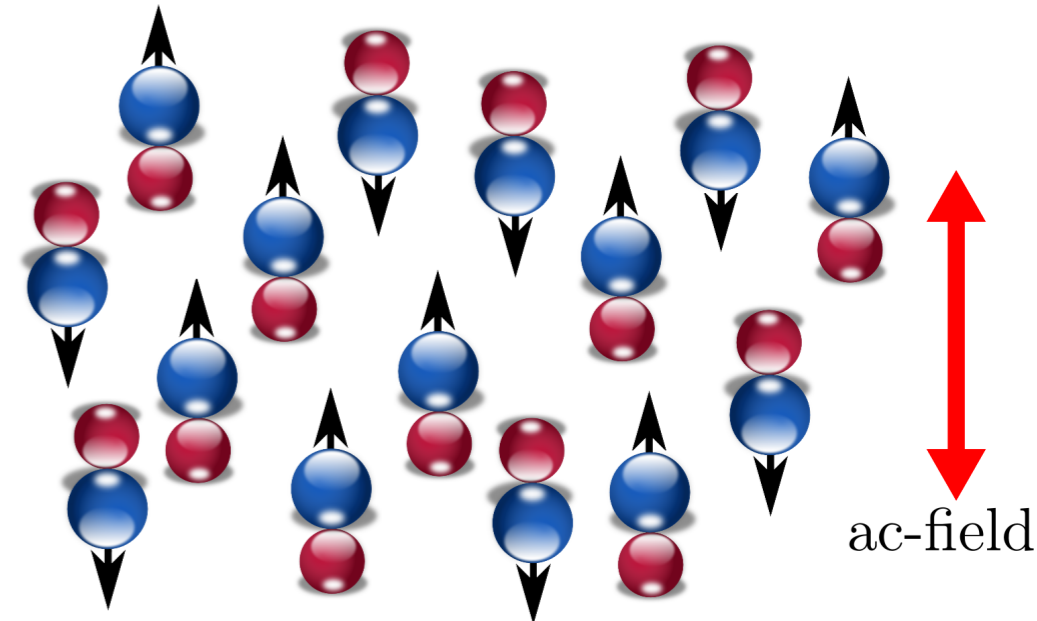
Moléculas libres



Añadiendo un
campo láser

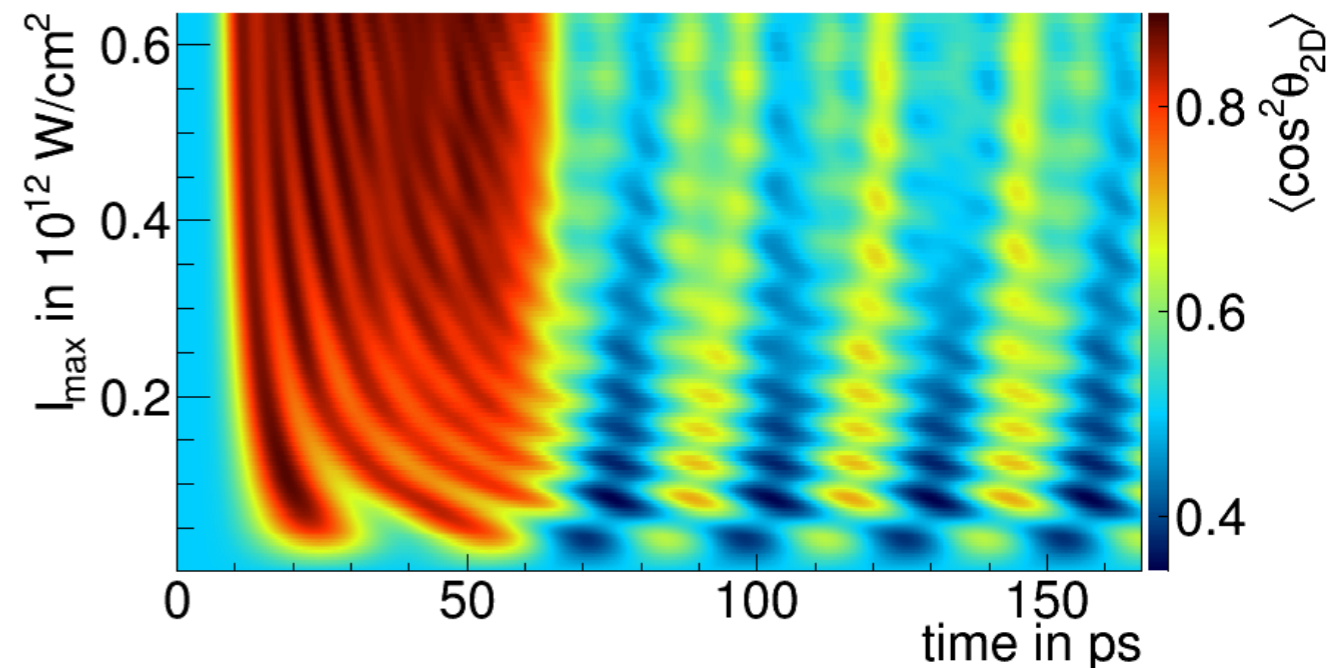
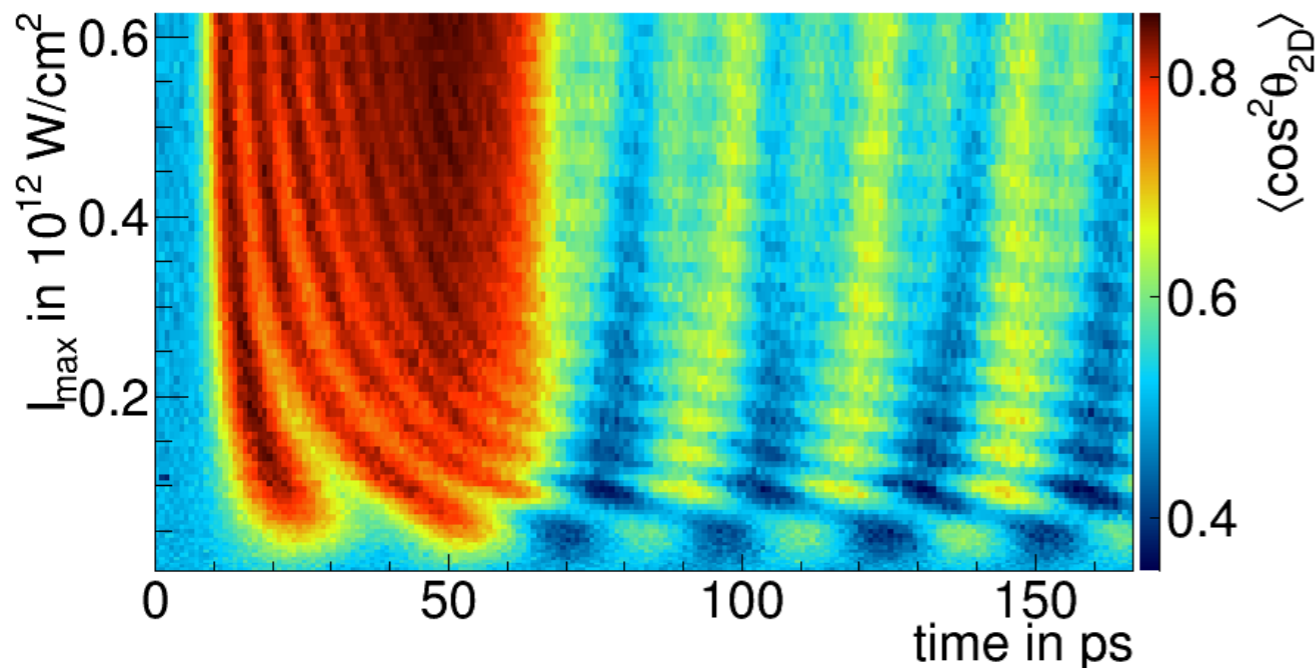


Moléculas alineadas



Experimental results

Theoretical results



Moléculas en campos externos

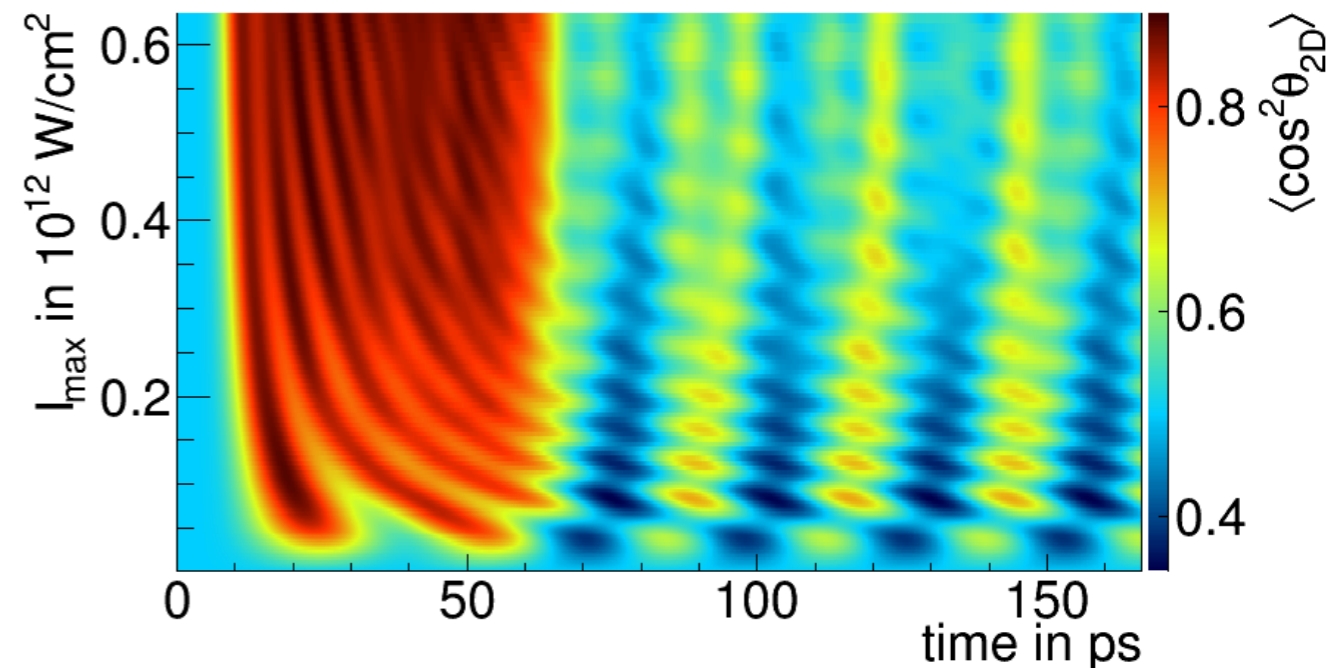
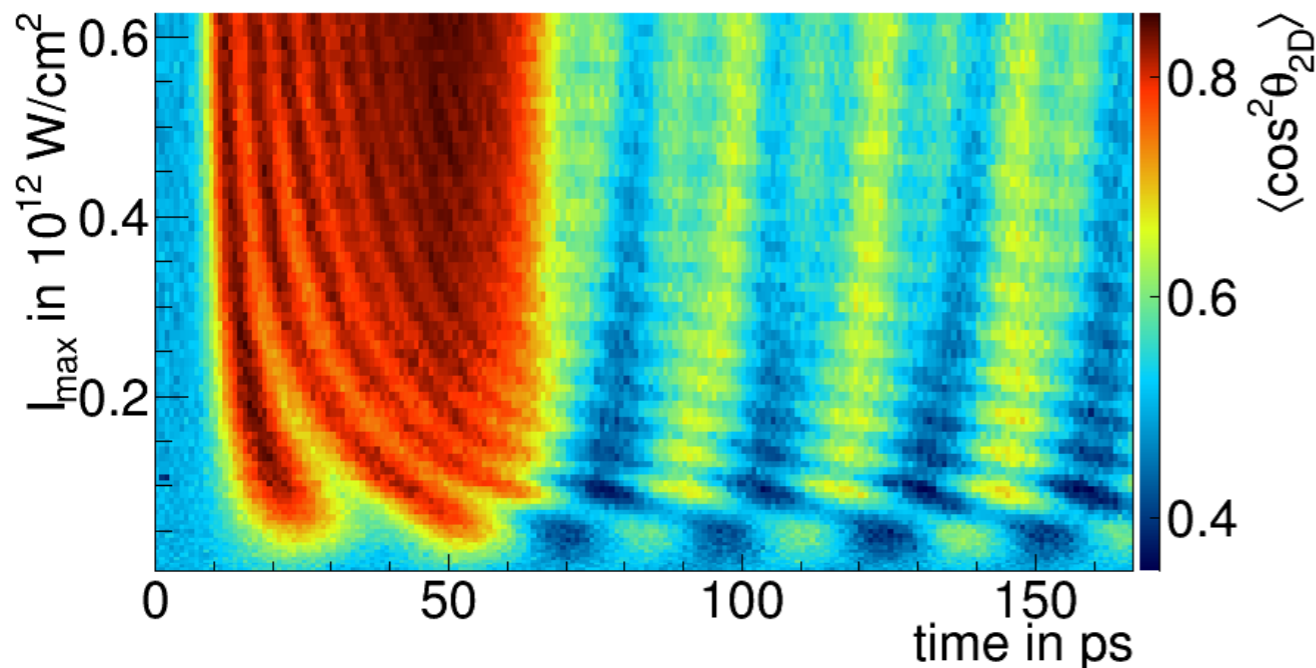
Moléculas libres

Moléculas alineadas

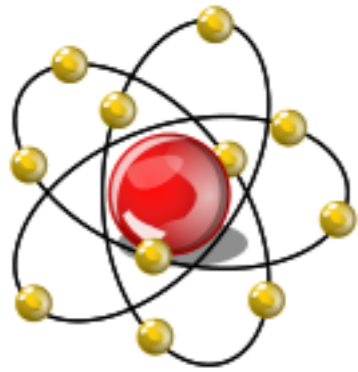
Añadiendo un
campo láser

Colaboración con los grupos experimentales de
Jochen Küpper (DESY, U. Hamburg)
Henrik Stapelfeldt (University Aarhus)

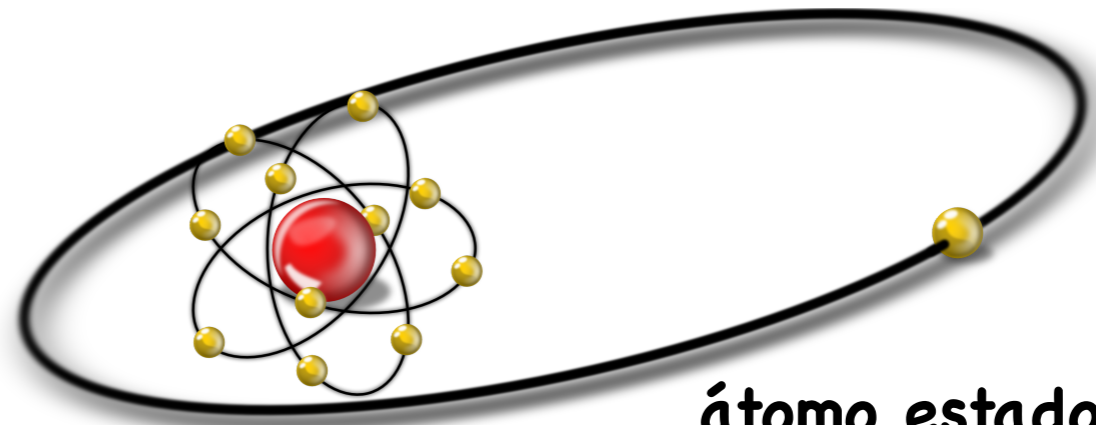
c-field



Átomos Rydberg



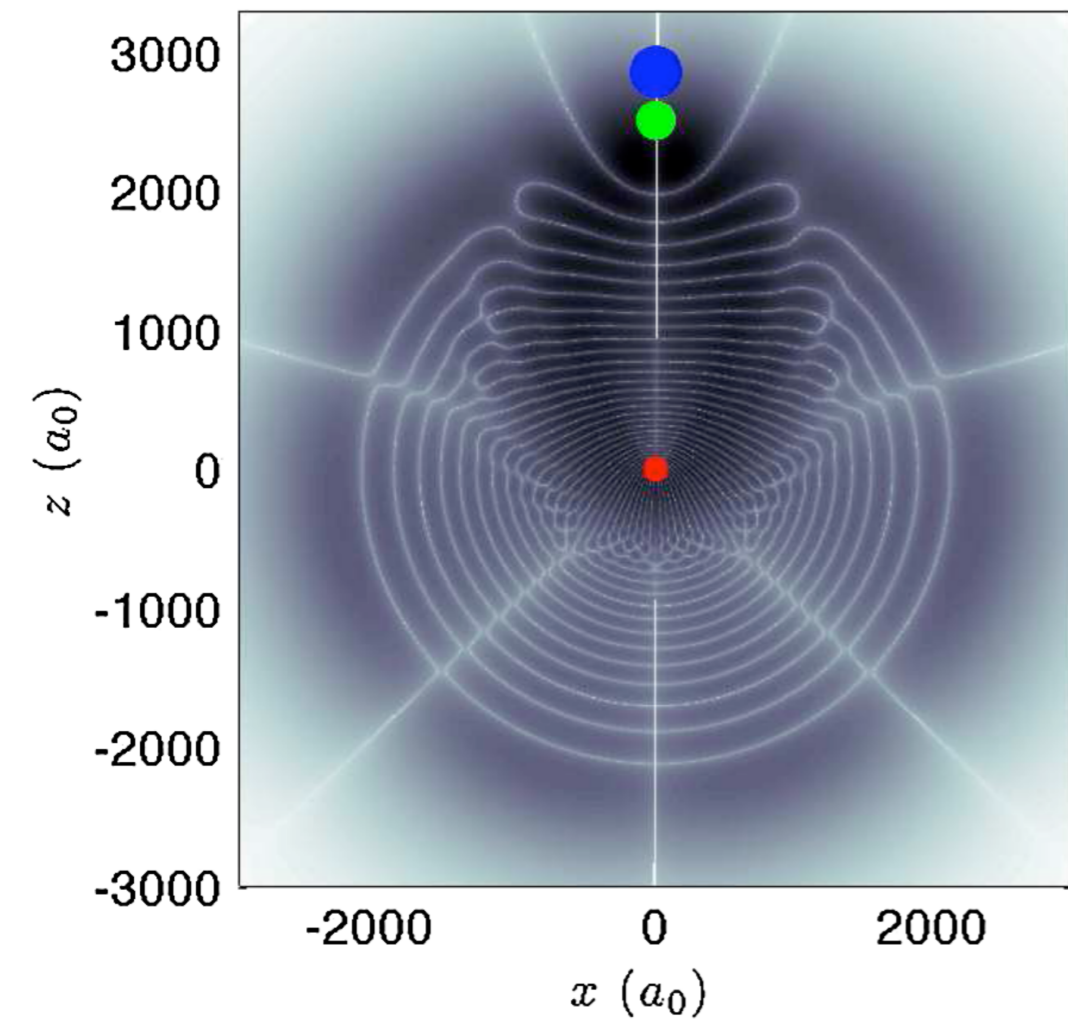
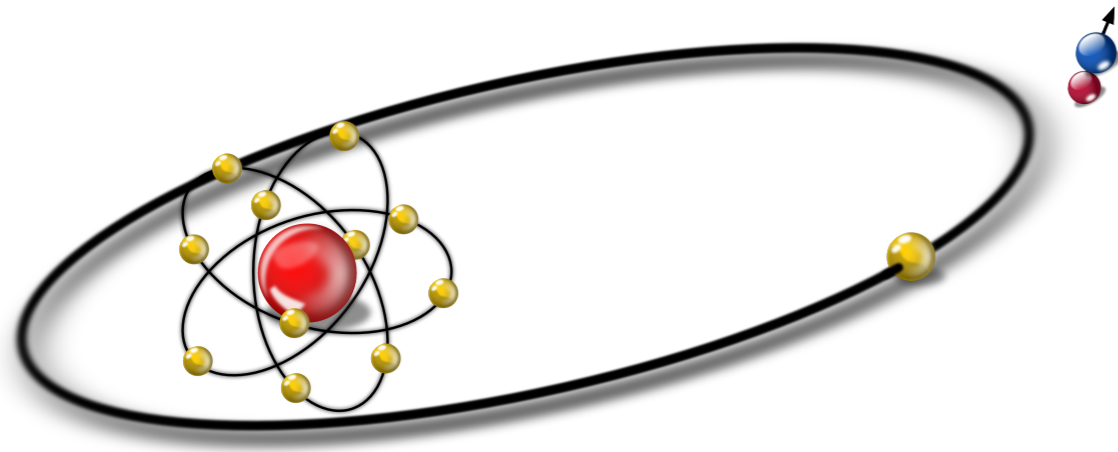
átomo estado fundamental



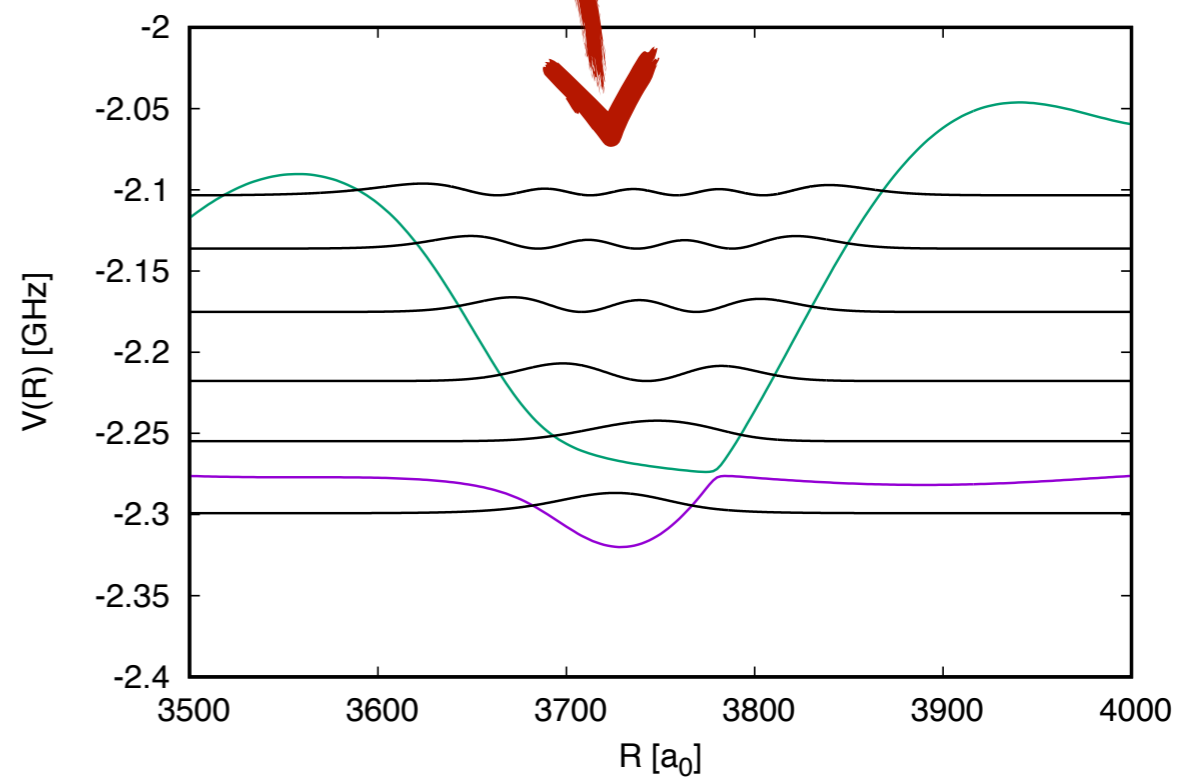
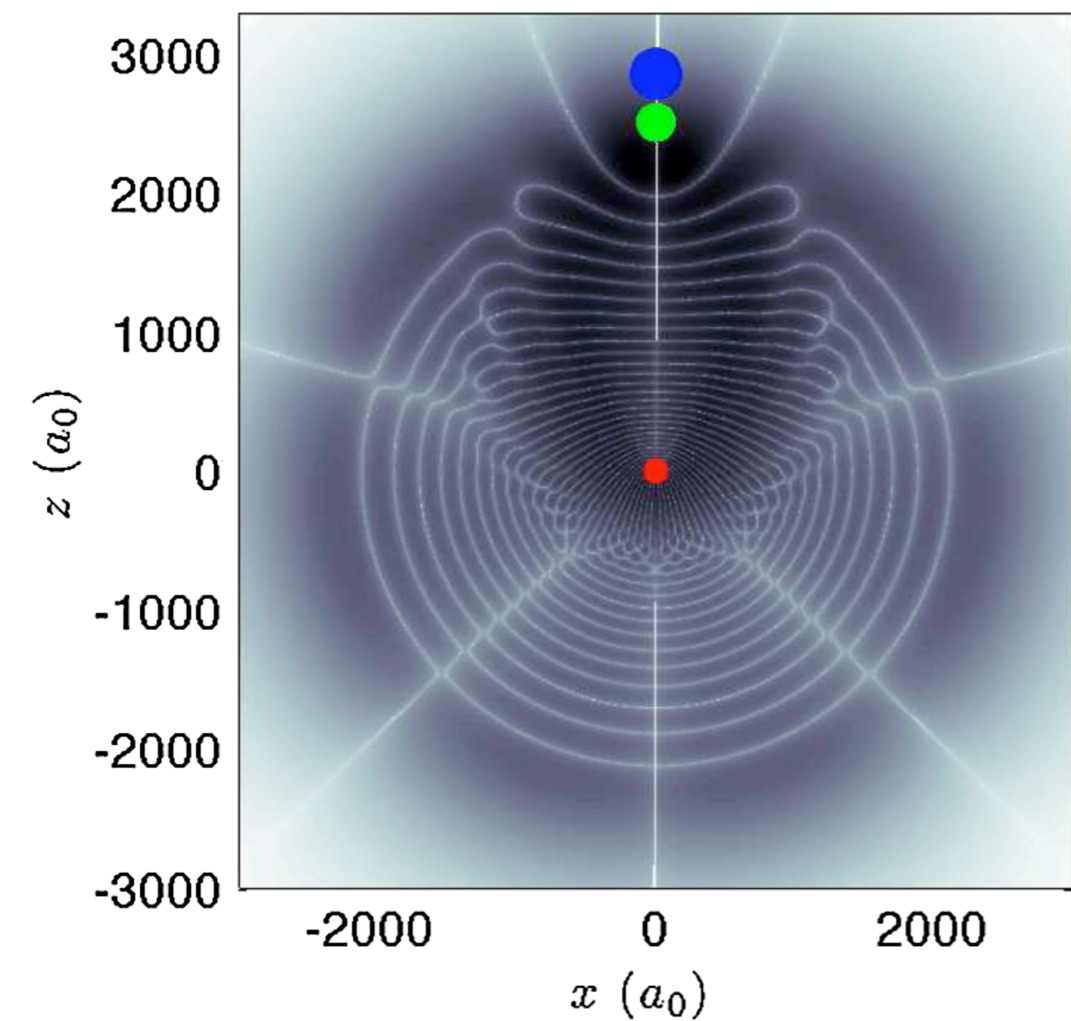
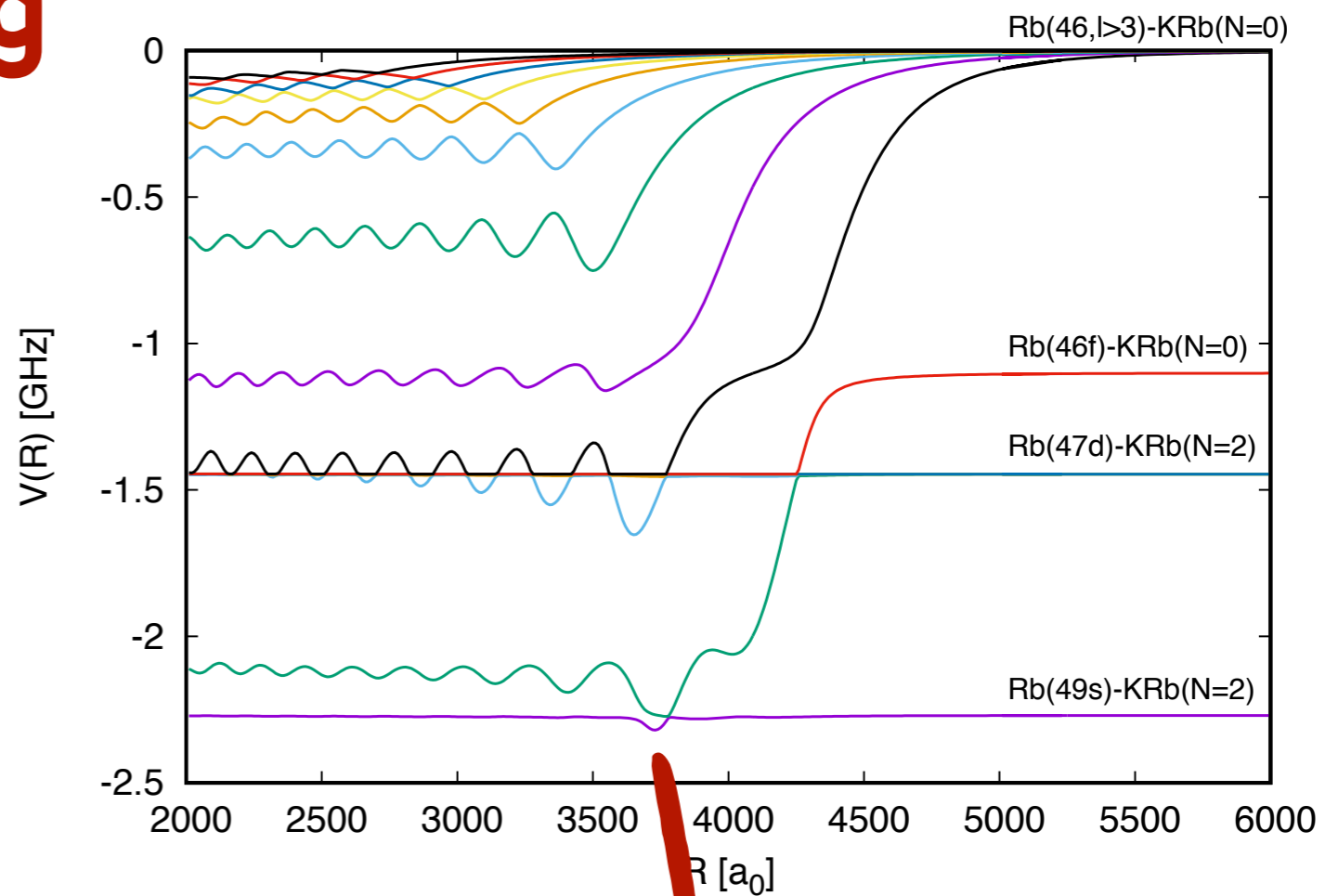
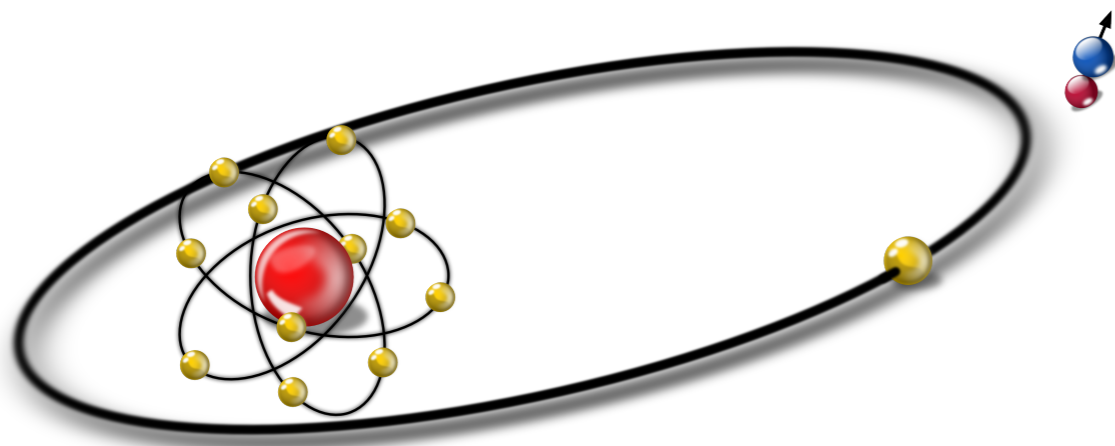
átomo estado Rydberg

		Rb(35s)	H(2p)
Binding energy	n^{-2}	108.5 cm^{-1}	$2.7 \cdot 10^8 \text{ cm}^{-1}$
Orbital radius	n^2	998 a_0	$5a_0$
Transition Dipole moment	n^2	up to $676ea_0$	
Radiative lifetime	n^3	45.000ns	1.6ns

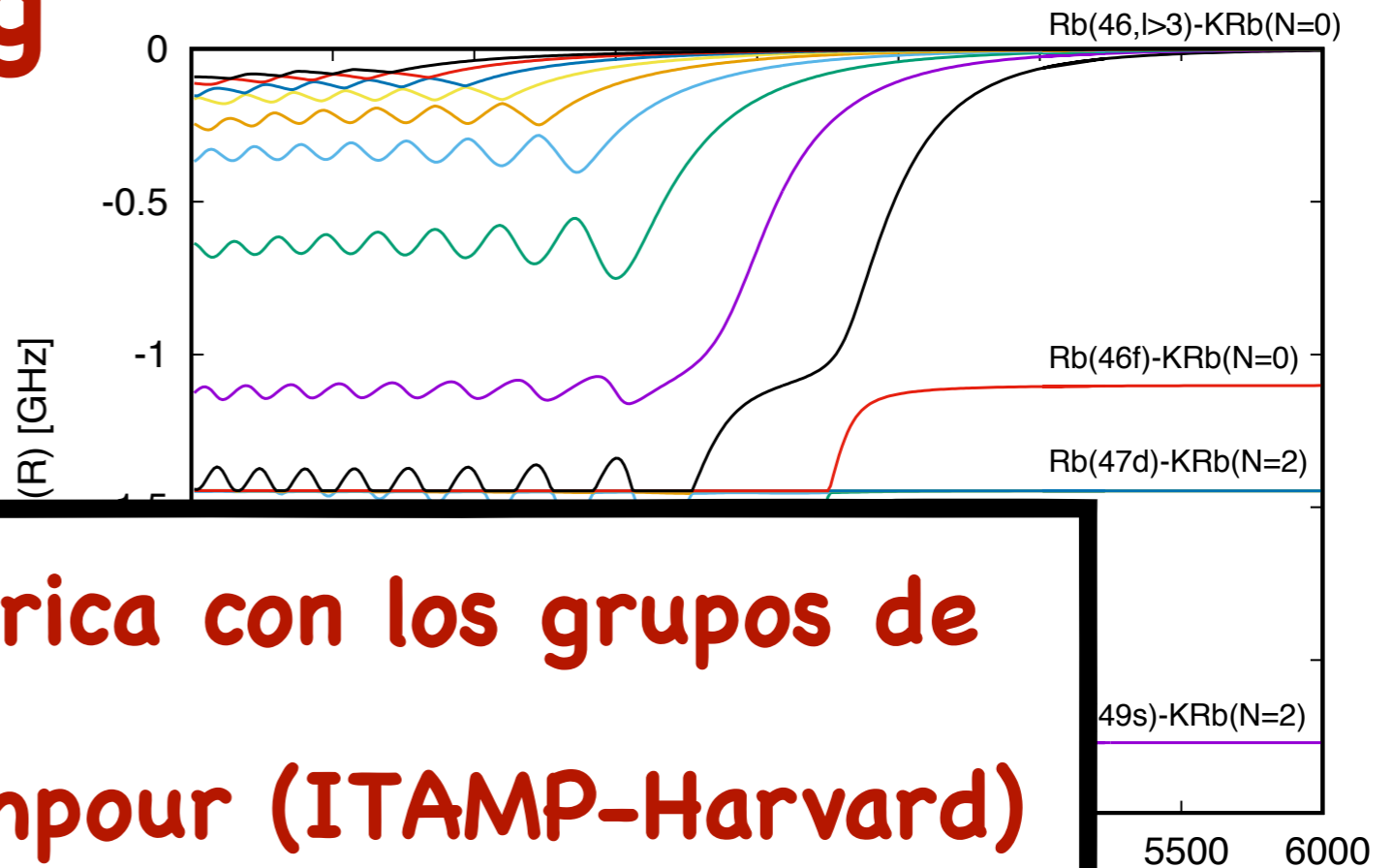
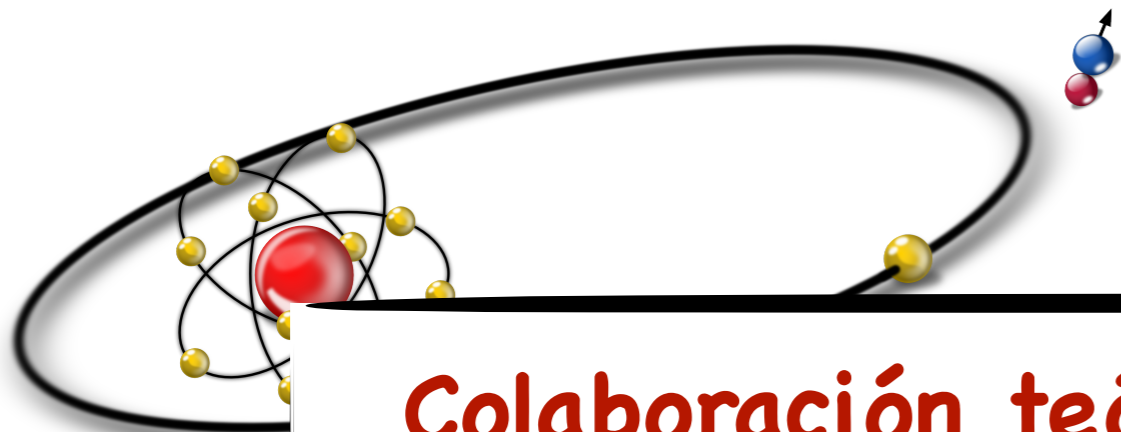
Moleculas Rydberg



Molecular Rydberg

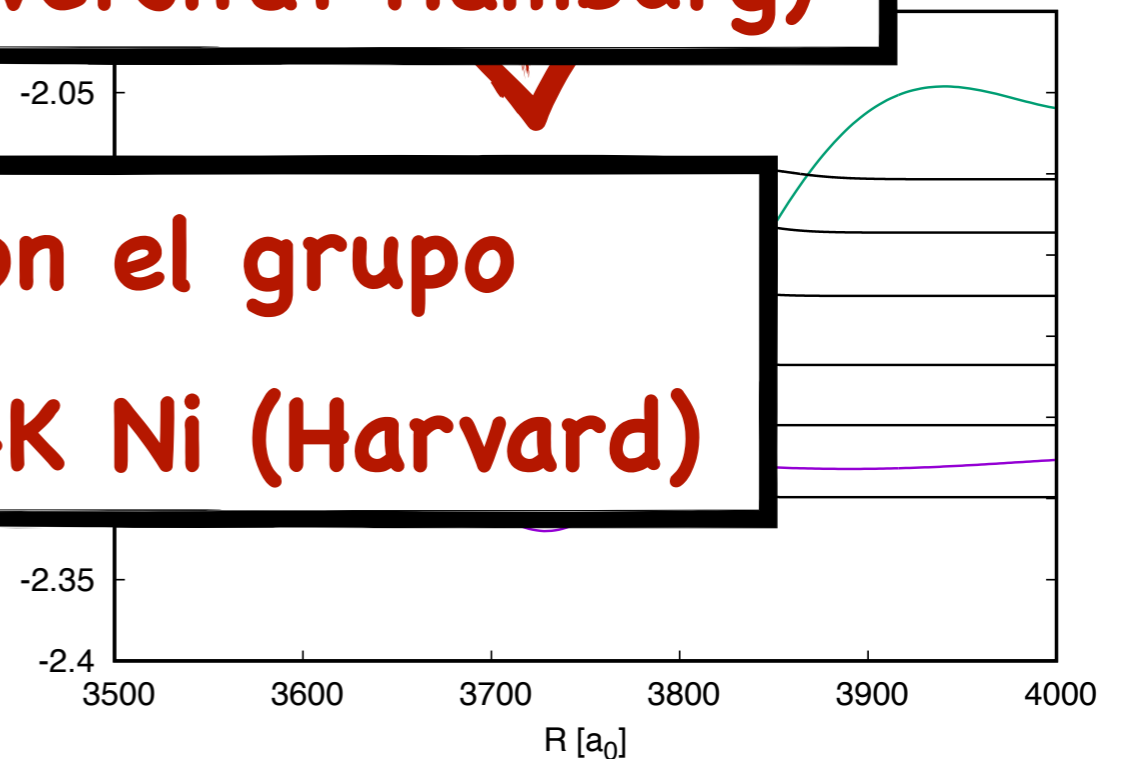
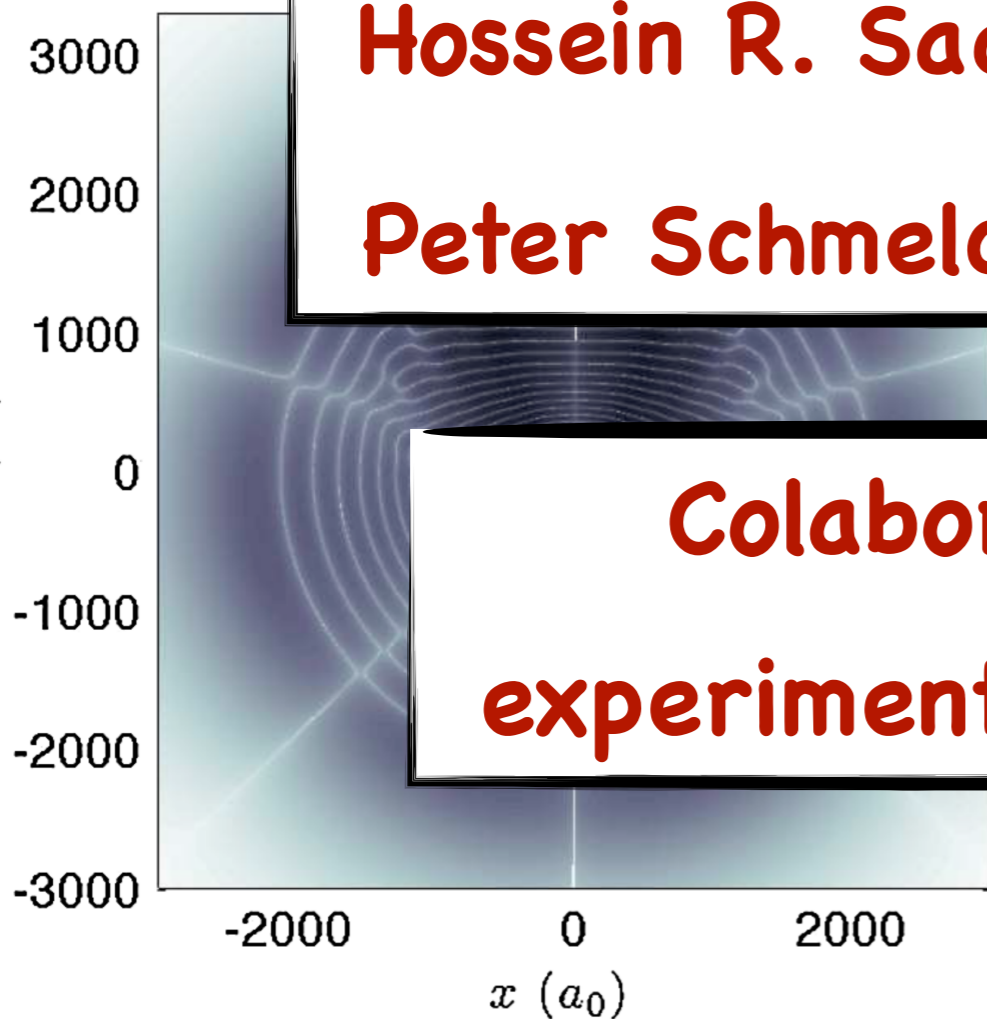


Moleculas Rydberg



**Colaboración teórica con los grupos de
Hossein R. Sadeghpour (ITAMP-Harvard)
Peter Schmelcher (Universität Hamburg)**

**Colaboración con el grupo
experimental de K-K Ni (Harvard)**



Otras cosas

Formación de moléculas ultrafrías

En colaboración con:

Anne Crubellier & Eliane Luc-Koenig
(Laboratoire Aimé Cotton)
Christiane Koch (Universität Kassel)

Control de la interacción
entre átomos fríos

En colaboración con:

Paul S. Julienne (University of Maryland)
Guido Pupillo (Université Strasbourg)

Aplicaciones

Información Cuántica

Predicción y diseño de posible experimentos

Control de la dinámica rotacional

Separación de moléculas con aplicaciones industriales.