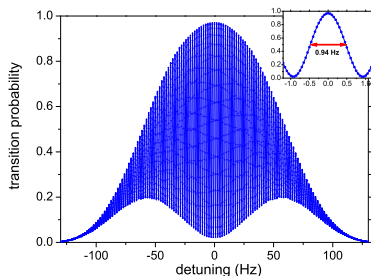


Atoms and photons

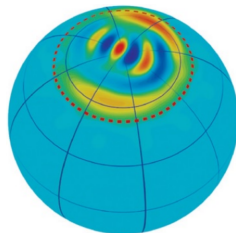
- ▶ **The team:** H el ene Perrin (lectures), Cl ement Sayrin and Tarik Yefsah (exercice classes)
- ▶ **Topic:** light-matter interaction in the semi-classical and quantum regimes, light field quantization
- ▶ **Course programme:**
 - short reminder on Einstein's coefficients: 1 lecture
 - semi-classical approach (interaction, atom and field relaxation, optical Bloch equations): 5 lectures
 - field quantization (field operators, Fock states, coherent states, Wigner representation of states, relaxation): 4 lectures
 - quantum field coupled to quantum matter (photodetection, dressed states, cavity quantum electrodynamics...): 3 lectures



Ramsey fringes from a Cs μ wave clock

Atoms and photons

- ▶ **Lecture notes** available at http://www-lpl.univ-paris13.fr/bec/BEC/Team_Helene.htm
- ▶ **Exercice classes** based on research papers: absorption in the saturation regime, laser cooling, EIT, Rydberg atoms, etc.
- ▶ **Exam**: to be defined, either written exam (~ 3 hours) or oral exam.



Wigner function of a spin cat state

First lecture: Wednesday 7 September, 9:00