NEXT Invited Scientists

Guest name	**Flavia A. Gómez Albarracín**
osition	Junior Researcher
Affiliation	National Research Council (CONICET), Argentina
Host laboratory in NEXT	Laboratoire de Physique Théorique Toulouse - UMR 5152 – Strongly Correlated Systems group
NEXT contact (name and e-mail)	Pierre Pujol - pierre.pujol@irsamc.ups-tlse.fr
Dates of stay	From 4th June 2017 to 4th December 2017

Brief Biodata

I am a Junior Researcher from the National Research Council (CONICET-Argentina) and part of the Strongly Correlated Systems group in Instituto de Fisica de La Plata. My research is focused mainly in exotic phases in frustrated magnetism. My recent work is a result of an ongoing collaboration with experimental groups and includes the study of the effect of a magnetic field in spin ice systems (Nature Communications 7, 2016)

I studied in the University of Buenos Aires and obtained my PhD in Physics in Universidad Nacional de La Plata (UNLP), Argentina, in 2011. From 2005 to 2011 I was part of the Pierre Auger experiment, focusing mainly on data analysis and simulations. In 2012 I started working in the Strongly Correlated Sytems group as a postdoc, and obtained a position there in 2015. I have done scientific stays in different universities such as Université de Pierre et Marie Curie and Universidad de Santiago de Compostela. I also participate actively in teaching and outreach activities as part of the Physics Museum (UNLP) since 2011.

Research project during the visit at NEXT

Descriptive Title Kitaev – Heisenberg model in corner sharing lattices

The project is focused in the area of frustrated magnetic systems where the competition of different interactions gives rise to exotic phenomena such as ground state degeneracy, entropic selection of states, magnetisation plateau, non trivial magnetic orders, topological protected arrangements of spins, etc.

In particular, we aim to study the competition of exchange (symmetric Heisenberg) and Kitaev interactions in the pyrochlore lattice. The Kitaev interaction is an Ising-like interaction in a given spin component {x,y,z}, and thus is anisotropical. The pure Kitaev model is exactly soluble in the honeycomb lattice, where the ground state is a quantum spin liquid A few years ago, the combination of these two types of interactions up to nearest neighbours (in the so called « Kitaev Heisenberg » model) has been pointed out as relevant to the physics of materials Na2IrO3 y Li2IrO3, both honeycomb iridates. This has generated great interest in the Kitaev-Heisenberg model, which is currently being actively studied by the condensed matter community in both quantum and classical systems.

The main goal of this project is to extend this study to corner-sharing lattices, such as pyrochlore and kagomé, where exotic phases relevant to new synthetised materials might be expected.