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Press Release

## German Physical Society gives SAMOP Dissertation Prize to Dr. Gemma De las Cuevas



The AMOP (Atoms, Molecules, Quantum Optics and Plasma) section of the German Physical Society has given this year's Dissertation Prize to Dr. Gemma De las Cuevas. The Catalan physicist got her Ph.D. last year at the Chair of Professor Hans Briegel at the Universität Innsbruck (Austria). In September 2011 she moved to the Max Planck Institute of Quantum Optics (Garching) where she works in the Theory Division of Professor Ignacio Cirac. The SAMOP prize is awarded annually to young scientists for excellent results achieved in course of their dissertation thesis and is donated with a travel grant and 1500 Euro. The award ceremony took place on March 14, 2012, on the occasion of the annual spring meeting of the German Physical Society in Stuttgart.

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Gemma De las Cuevas was born in Barcelona (Catalonia, Spain) in 1984. In 2002 she began her physics studies at the Universitat Autònoma of Barcelona, completing with a Master degree in 2007. She carried out her Ph.D. thesis "A Quantum Information Approach to Statistical Mechanics" under the supervision of Professor Hans Briegel (Universität Innsbruck and Institute for Quantum Optics and Quantum Information IQOQI, Austria), who also has nominated her for the SAMOP dissertation prize. In January 2012 she has received a grant from the Alexander von Humboldt Foundation. "My thesis work is clearly based on research that has been carried out at this chair by Professor Hans Briegel, Dr. Maarten van den Nest (today at MPQ) and Dr. Wolfgang Dür, in close collaboration with Professor Miguel Angel Martin-Delgado from Madrid", the young scientist points out. As a central topic of her thesis she gained new results on models from classical statistical mechanics, using techniques and algorithms developed in quantum information theory. The focus was on classical spin models which are used to simulate a variety of many body systems, ranging from magnetic materials to quantum gravity.

Now, in the division of Professor Cirac, Dr. De las Cuevas moved to a new field, at the interface of quantum physics and condensed matter physics: she describes one- and two-dimensional many body systems with so-called 'tensor networks'. The goal is to achieve a new mathematical characterization which will lead to a deeper understanding of those systems. *Olivia Meyer-Streng*

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