



Contribution ID: 72

Type: **Poster**

Microscopic magnetic nature of the quasi-one-dimensional antiferromagnet BaCo₂V₂O₈

Friday, 16 September 2011 12:41 (2 minutes)

BaCo₂V₂O₈, belongs to a wide group of quasi-1D antiferromagnets (AF). The Q1D compounds display a variety of fascinating ground states governed by the strong spin-spin coupling along the 1D direction and a much weaker coupling along other directions. BaCo₂V₂O₈ display a long-range AF order below $T_N=5$ K and possibly short-range order all the way up to 30 K. Further, a novel type of field induced magnetic order has been found for $T<1.8$ K and $H_c>3.9$ T. It was determined to be an incommensurate spin structure caused by quantum fluctuations, fitting well to theoretical predictions for a so-called Tomonaga-Luttinger liquid (TLL). To the best of our knowledge, we present here the first investigation of the microscopic magnetic nature of single crystalline BaCo₂V₂O₈ samples. Our data reveal several clear muon frequencies below T_N indicating the onset of a long-range order. Above 5 K, the μ SR spectra are well fitted to a simple power-exponential relaxing function. The temperature dependence of the relaxation-rate as well as the power display a clear anomaly around $T=40$ K, indicating the onset of short-range 1D correlations. Finally we also present initial field dependent data.

Please specify poster or talk

Poster

Please specify the session

Multiple order parameter systems

Primary author: Dr MANSSON, Martin (Laboratory for Solid State Physics, ETH Zurich)

Co-authors: Dr AMATO, Alex (LMU, PSI, Switzerland); Prof. ZHELUDEV, Andrey (Laboratory for Solid State Physics, ETH Zurich); Dr NOZAKI, Hiroshi (Toyota Central Research and Development Labs. Inc., Japan); Dr SUGIYAMA, Jun (Toyota Central Research and Development Labs. Inc., Japan); Dr PRSA, Krunoslav (Laboratory for Solid State Physics, ETH Zurich); Dr OMURA, Kumiko (KYOKUGEN, Osaka University, Japan); Prof. HAGIWARA, Masayuki (KYOKUGEN, Osaka University, Japan); Dr KIMURA, Shojiro (Institute for Materials Research, Tohoku University, Japan)

Presenter: Dr MANSSON, Martin (Laboratory for Solid State Physics, ETH Zurich)

Session Classification: Poster session II and lunch

Track Classification: Poster Session II (Friday)