



Contribution ID: 84

Type: POSTER

## Nuclear electric quadrupole interactions of $^{111}\text{Cd}$ in the heavy-fermion compound $\text{CeCoIn}_5$

The nuclear electric quadrupole interaction of the probe nucleus  $^{111}\text{Cd}$  on In sites of the heavy-fermion compound  $\text{CeCo}(\text{In}_{1-x}\text{Sn}_x)_5$ ;  $x = 0.01$  has been investigated in the temperature range  $15 \leq T \leq 290$  K by perturbed angular correlation spectroscopy. Single crystals of  $\text{CeCo}(\text{In}_{1-x}\text{Sn}_x)_5$  grown from an In flux by combining stoichiometric amounts of Ce and Co with excess In [1] were doped with the PAC probes  $^{111}\text{Cd}$  by diffusion at 700 K of radioactive  $^{111}\text{In}$  from a carrier-free solution of  $^{111}\text{InCl}_3$  into the host lattice. Apart from a sizeable fraction of non-reacted In metal, the PAC spectra contain contributions of two In-sites related to the  $\text{CeCoIn}_5$  structure, an axially symmetric and an asymmetric site. The  $^{111}\text{Cd}$  electric field gradient (EFG) of these sites differs substantially from the two EFG values determined by NQR measurements for the probe  $^{115}\text{In}$  on sites 1c and 4i of  $\text{CeCoIn}_5$ , both with respect to symmetry and strength ratio. For insight into the mechanism leading to these differences, an ab initio study of the structural and electronic properties of  $^{111}\text{Cd}$  on In sites of  $\text{CeCoIn}_5$  is under way.

**Are you a student, a delegate from developing countries or a participant with physical needs and would like to apply for a sponsored accomodation. Please answer with yes or no.**

no

**Please specify whether you would prefer an oral or poster contribution.**

poster

**Primary author:** Prof. FORKER, Manfred (Centro Brasileiro de Pesquisas Fisicas, Rio de Janeiro, Brasil)

**Co-authors:** Prof. BAGGIO-SAITOVITCH, Elisa (Centro Brasileiro de Pesquisas Fisicas, Rio de Janeiro, Brasil); Prof. SAITOVITCH, Henrique (Centro Brasileiro de Pesquisas Fisicas, Rio de Janeiro, Brasil); Dr ERRICO, Leonardo A. (Instituto de Fisica, UNLP, La Plata, Argentina); Dr TAYLOR, Marcela A. (Instituto de Fisica, UNLP, La Plata, Argentina); Dr SILVA, Paulo R. J. (Centro Brasileiro de Pesquisas Fisicas, Rio de Janeiro, Brasil); Prof. ALONSO, Roberto E. (Instituto de Fisica, UNLP, La Plata, Argentina); Dr RAMOS, Sheilla M. (Centro Brasileiro de Pesquisas Fisicas, Rio de Janeiro, Brasil)

**Presenter:** Prof. BAGGIO-SAITOVITCH, Elisa (Centro Brasileiro de Pesquisas Fisicas, Rio de Janeiro, Brasil)

**Track Classification:** Semiconductors, Metals and Insulators