

Experimental report

08/09/2022

Proposal: CRG-2542

Council: 4/2018

Title: Search for fluctuations of loop current in YBCO

Research area:

This proposal is a new proposal

Main proposer: Dalila BOUNOUA

Experimental team: Lucile MANGIN-THRO

Dalila BOUNOUA

Philippe BOURGES

Local contacts: Frederic BOURDAROT

Samples: YBa₂Cu₃O_{6.6}

| Instrument | Requested days | Allocated days | From | To |
|------------|----------------|----------------|------------|------------|
| IN22 | 7 | 7 | 10/10/2018 | 14/10/2018 |
| | | | 17/10/2018 | 22/10/2018 |

Abstract:

| | |
|-----------------------|---|
| CRG-2542 & CRG-2651 | |
| Title | Search for fluctuations of loop current in YBCO |
| Main proposer | Dalila BOUNOUA |
| Co-proposer(s) | Lucile MANGIN-THRO ILL, GRENOBLE ILL Jaehong JEONG CEA/DSM/CAM/LLB, SACLAY ,GIF-SUR-YVETTE FR Philippe BOURGES CNCE/LLB-LAB LEON BRILLOUIN, SACLAY ,GIF-SUR-YVE Yvan SIDIS |

Search for orbital fluctuations of loop currents in YBCO

IN22- kf 2,662Å⁻¹
Cryopad
Heusler-Heusler
Sample YBCO wgp

In that series of two experiments of the ANR project NirvAna, we searched for possible orbital fluctuations in YBCO around wave-vectors where we observed the loop currents magnetism [Bourges et Sidis, CR Physique, 12, 461 (2011)]. We looked at a sample of x=6.9 of mass=7. That exhibits no impurity green phase.

A few configuration and energies have been tried. The figure shows The H-scan at 4 meV. It is the difference between 300K -140K and could correspond to the orbital magnetic fluctuations we are looking for. However, the counting times are prohibitive to be able to study these fluctuations in great details.

SFx (300-140)K

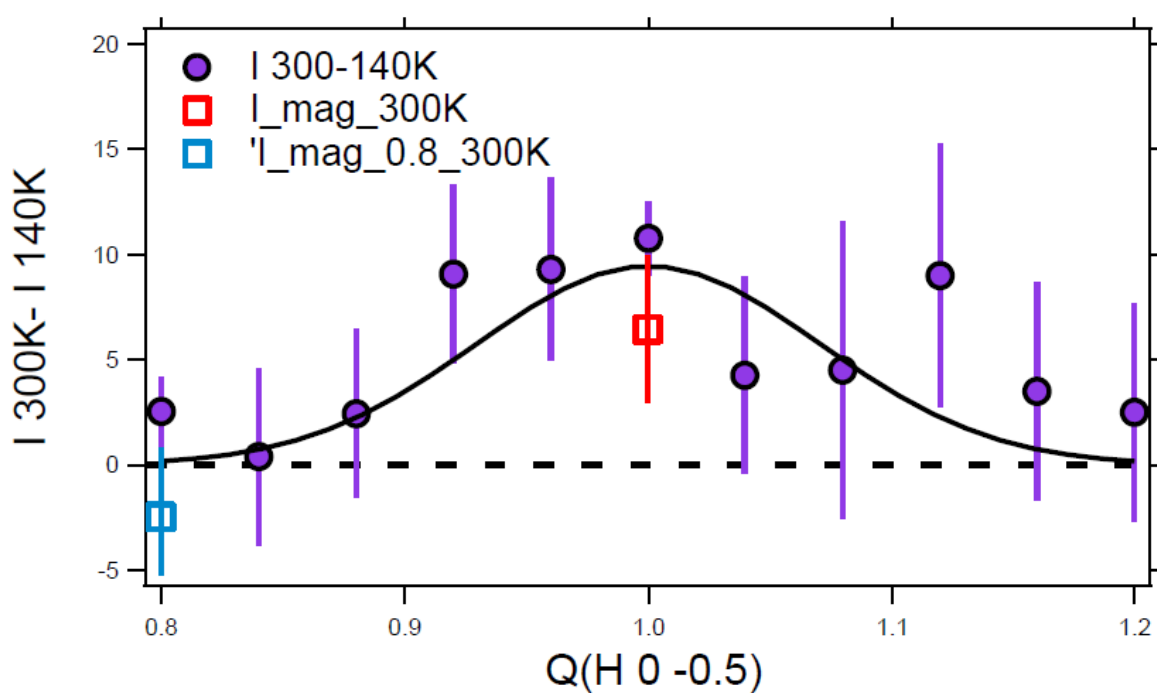


Figure: H-scan at room temperature in the spin-flip channel at room temperature.