

Experimental report

07/10/2024

Proposal: CRG-3026

Council: 4/2023

Title: Quasi-static elastic domains in the quantum paraelectric phase of SrTiO₃

Research area: Physics

This proposal is a new proposal

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Experimental team: Benoit FAUQUE

Local contacts: Frederic BOURDAROT

Samples: SrTiO₃

Instrument	Requested days	Allocated days	From	To
IN22	3	3	21/11/2023	24/11/2023

Abstract:

The abstract is in the scientific case pdf file.

Report on the experience CRG-3026 : Quasi-static elastic domains in the quantum paraelectric phase of SrTiO₃

In these three days experiment we have studied the TA (c_{44}) phonon branch in SrTiO₃. The aim of this experiment was to study this mode in an other Brillouin zone. In contrast with cold spectrometers, IN22 allow us to work with a high flux at $k_f=2.662 \text{ \AA}^{-1}$. To improve the Q and energy resolutions we have used collimations. However, in spite of our efforts, we did not find a good configuration around the Bragg (2,2,0) and did not gain any additional information on (2,0,0) that we previously studied [1]. In the last day we decided to study the TA branch of Sr_{1x}Ca_xTiO₃. This last result would be used in a manuscript summarizing the evolution of the TO-TA coupling in Sr_{1x}Ca_xTiO₃.

References

- [1] Fauqué, B., Bourges, P., Subedi, A., Behnia, K., Baptiste, B., Roessli, B., Fennell, T., Raymond, S., and Steffens, P. (Oct, 2022) Mesoscopic fluctuating domains in strontium titanate. *Phys. Rev. B*, **106**, L140301.