

Abstract Submitted
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Optic modes in $\text{PbMg}_{1/3}\text{Nb}_{2/3}\text{O}_3$ relaxor by hyper-Raman scattering ALI AL-ZEIN, LCVN, UMR CNRS 5587, University Montpellier II, France and ICG, UMR CNRS 5253, Equipe PMOF, University Montpellier II, France, JIRKA HLINKA, Institute of Physics, Academy of Sciences of the Czech Republic, Praha, Czech Republic, JEROME ROUQUETTE, ICG, UMR CNRS 5253, Equipe PMOF, University Montpellier II, France, BERNARD HEHLEN, LCVN, UMR CNRS 5587, University Montpellier II, France — Hyper-Raman scattering (HRS) experiment is performed in three different single crystals of $\text{PbMg}_{1/3}\text{Nb}_{2/3}\text{O}_3$ (PMN) relaxor [1]. The relative intensities of the band near 250 cm^{-1} in various polarization geometries are fully compatible with the HRS tensor of the F_{2u} ‘silent’ mode of the parent O_h cubic structure. The temperature dependence of the three F_{1u} polar modes was investigated between 20 K and 800 K. High-resolution data reveal that the lowest F_{1u} mode is splitted up to the highest investigated temperatures. On cooling, the low frequency component strongly decreases in frequency and exhibits clear soft mode behaviour with a crossover from a vibrational to a relaxational behaviour around $T_d \approx 620\text{ K}$ [2]. This observation gives a new insight into the low-frequency dynamics of PMN-type relaxor systems.

[1] A. Al-Zein *et al.*, PRB **78**, 134113 (2008) ; B. Hehlen *et al.*, PRB **75**, 052104 (2007).

[2] A. Al-Zein *et al.*, submitted to PRL.

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