Low temperature Mössbauer study of $Fe_{1.05}Te$

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FeTe is actively investigated after discovering superconductivity in FeSe which has similar layered crystal structure [1]. FeTe shows antiferromagnetic order at low temperatures [2]. It is well known that FeTe always grows with excess iron atoms [3] which affect the electronic properties [4] and complicate magnetic order of $Fe_{1+y}Te$ compounds [2]. Mössbauer measurements at low temperatures (LT) were carried out in order to investigate the features of magnetic ordering in $Fe_{1.05}Te$ compound which contain excess iron atoms. Mössbauer spectrum collected at 4.2 K has complex shape with a number of lines which could be attributed to several magnetic sextets. The minimal number of sextets which allows us to describe accurately the LT spectrum was found equal to four (with following partial sub-spectra areas distribution: 0.46, 0.31, 0.17, 0.06). The occurrence of the four contributions into the LT spectrum also could be a signature of intrinsic property of the $Fe_{1+y}Te$ compound. Existence of the four magnetically non-equivalent iron positions in the lattice is confirmed by our *ab initio* calculation of the Mössbauer spectra parameters.

The support by the subsidy allocated to Kazan Federal University for the state assignment in the sphere of scientific activities and by the Program of Competitive Growth of Kazan Federal University is gratefully acknowledged.

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