

## ACOUSTOELECTRIC STUDIES OF MANGANITE FILMS

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We report on the observation and investigations of transversal and longitudinal acoustoelectric (AE) effects produced by surface acoustic wave (SAW) in a layered structure composed of manganite  $\text{La}_{0.67}\text{Ca}_{0.33}\text{MnO}_3$  (LCMO) film and piezoelectric  $\text{LiNbO}_3$  (LNO) substrate. The investigated LCMO films were pressed with a gap of  $0.5 \mu\text{m}$  to the LNO substrate where the acoustic wave is generated. In such a structure the AE effect arises only due to the penetration of the electric field accompanying the SAW into manganite film and its interaction with free charge carriers which results in a dc acoustoelectric voltage. Our investigations have shown that both transversal and longitudinal AE voltage display nonmonotonic temperature dependencies and approach their maximum values in the vicinity of metal-insulator transition in LCMO. The sign of the AE voltage corresponds to the hole-like conductivity in the films. The transversal effect was revealed to be even with respect to the SAW wave vector. The longitudinal AE effect was shown to be odd in the wave vector. Experimental results on the investigation of AE effects as a function of the conductivity of manganite films, intensity of sound, and SAW pulse duration are presented. The data obtained are discussed in the frame of the theory of acoustoelectric effect in layered structures.

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9.7 cm