

## Electrical Transport in Strained $La_{0.7}Ca_{0.3}MnO_3$ Films

V. Markovich <sup>a</sup> E. Vlahov <sup>b,c</sup> Y. Yuzhelevskii <sup>a</sup> G. Gorodetsky <sup>a</sup>  
B. Blagoev <sup>d</sup> and K. Nenkov <sup>c,e</sup>

<sup>a</sup>Department of Physics, Ben-Gurion University of the Negev, 84105 Beer-Sheva, Israel

<sup>b</sup>Institute of Solid State Physics, Bulgarian Academy of Sciences, 72 Tzarigradsko  
Chaussee Blvd, 1784 Sofia, Bulgaria

<sup>c</sup>International Laboratory for high Magnetic fields and Low Temperatures, 95  
Gajowicka Str., 53 421 Wroclaw, Poland

<sup>d</sup>Institute of Electronics, Bulgarian Academy of Sciences, 72 Tzarigradsko Chaussee  
Blvd, 1784 Sofia, Bulgaria

<sup>e</sup>Institut für Festkörper- und Werkstofforschung Dresden, P.O.Box 270016, O1171,  
Dresden, Germany

Magnetotransport properties of 15 nm  $La_{0.7}Ca_{0.3}MnO_3$  thin films deposited on (100) LaAlO<sub>3</sub> substrate were investigated. Fine balance between the charge ordered insulating phase and ferromagnetic metallic phase results in the number of glassy features: significant hysteresis phenomena, memory effects and long-time relaxation of resistivity at turning on and off of magnetic field in wide temperature range 10 - 220 K. In this temperature range the resistance of the  $La_{0.7}Ca_{0.3}MnO_3$  films decreases significantly with current, exhibiting a nonlinear conduction, which cannot be explained by homogeneous Joule heating of the films. Effect of current on the resistance follows the temperature dependence of magnetization. Magnetotransport properties of strained thin films are discussed in the frame of cross-coupling of charge, spin and strain.

13.4 cm

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### Corresponding author :

E. Vlahov

### Address for correspondence :

Institute of Solid State Physics, Bulgarian Academy of Sciences, 72 Tzarigradsko Chaussee  
Blvd, 1784 Sofia, Bulgaria

### Email address :

evlahov@issp.bas.bg

9.7 cm