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Ferromagnetic and reetrant spin-glass state in $La_{0.7}Ca_{0.3}Mn_{1-y}V_yO_3$ J. S. PARK, Y. P. LEE, Quantum Photonic Science Research Center and Department of Physics, Hanyang University, Seoul, 133-791 Korea, Y. S. LEE, Division of Information Communication and Computer Engineering, Hanbat University, Daejon, 305-719 Korea, J-H. KANG, Department of Nano and Electronic Physics, Kookmin University, 136-702, Korea — We have investigated the influence of vanadium (V)-doping on the electronic and the magnetic properties of $La_{0.7}Ca_{0.3}Mn_{1-y}V_yO_3$ prepared by the conventional solid state reaction. The resistivity upturn below the Curie temperature was observed in the V-doped manganites with $0.1 \leq y \leq 0.2$ due to the orbital ordering (OO). The V doping into the Mn sites results in an increase of the ferromagnetic (FM) superexchange interaction favoring the ferromagnetic insulating (FMI) phase. The magnetic relaxation of the explored compounds is found in both reentrant spin glass and high-temperarure FM phases. The heavy V -doping in the $La_{0.7}Ca_{0.3}MnO_3$ compound induces the reentrant behavior due to formation of OO FMI regions.

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