Domain formation in electronic nematic phase coupled to lattice deformation

HYEONJIN DOH, YONG BAEK KIM, Dept. of Physics, Univ. of Toronto, Canada, KEUN HYUK AHN, Advanced Photon Source, Argonne National Laboratory — Motivated by the experiments on Sr$_3$Ru$_2$O$_7$, we have investigated the possibility of domain formation in electronic nematic phase coupled to lattice deformations. It has been suggested that the formation of the nematic order may explain the two consecutive metamagnetic transitions observed in Sr$_3$Ru$_2$O$_7$. Our study may serve as the explanation of the high residual resistivity observed in a range of magnetic fields.