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Abstract for an Invited Paper
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Electronic Nematic Liquid in Correlated Systems¹

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It was proposed that the electronic nematic phase with a broken rotational symmetry is a generic ground state of a doped Mott insulator, and it has attracted much attention with the discovery of anisotropic quantum Hall phases in GaAs-heterostructures in large magnetic fields. A series of recent experiments on the bilayer ruthenate $\text{Sr}_3\text{Ru}_2\text{O}_7$ also suggest the existence of an anisotropic metallic phase which is uncovered by tuning the magnetic field. In this talk, I will show that the two consecutive metamagnetic transitions, a large residual resistivity, and an anisotropic magnetoresistance observed in the bilayer ruthenate can be understood via the electronic nematic order and its domains. I will also discuss an $\text{SO}(4)$ invariance at the critical point between the electronic nematic and d-wave superconducting states, and its relation to the similar $\text{SO}(4)$ invariance between the d-density wave and d-wave superconducting states.

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