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Griffiths singularity of quantum phase transition in ion-gated ZrNCl YU SAITO, The University of Tokyo, TSUTOMU NOJIMA, Tohoku University, YOSHIHIRO IWASA, The University of Tokyo — Recent technological advances of thin films fabrication, especially mechanical exfoliation, led to discoveries of less-disordered highly-crystalline two-dimensional (2D) superconductors; atomically thin NbSe2 and ion-gated 2D materials, which show intrinsic properties of 2D superconductors with minimal disorder; for example, metallic ground state [1,2], and unconventional 2D Ising superconductivity due to pure spin-valley locking effect [3-5]. In this talk, we focus on magnetotransport properties of an ionic-liquid gated ZrNCl, which exhibited Griffiths singularity-like behavior in superconductor-metal-insulator transition induced by magnetic fields at low carrier concentrations. The overall behavior is quite similar to the recent results of superconducting Ga thin films, in which quantum Griffiths singularity was observed in vortex-glass state [6]. We will discuss the relationship between Griffiths singularity and quantum tunneling or flux flow of vortices phase (vortex liquid) in our system. [1] Y. Saito et al. Science 350, 409 (2015). [2] A. W. Tsen et al. arXiv 1507.08639 [3] Y. Saito et al. Nature Phys. doi: 10.1038/nphys3580. (arXiv:1506.04146). [4] X. Xi et al. arXiv:1507.08731. [5] J. M. Lu et al. arXiv:1506.07620. [6] Y. Xing et al. Science 350, 542 (2015).

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