

Abstract Submitted
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Vortices, instantons and deconfinement in bilayer quantum Hall systems ZIQIANG WANG, Boston College — The physics of vortices, instantons and deconfinement is studied for layered superfluids in connection to bilayer quantum Hall excitonic superfluid at filling fraction $\nu = 1$. We derive an effective U(1) gauge theory description, taking into account both vortices and instantons induced by interlayer tunneling. The renormalization group flow of the gauge charge and the instanton fugacity shows that the coupling of the gauge field to vortex matter produces a continuous transition between the confining phase dominated by free instantons and condensed vortices and a deconfined gapless exciton condensate where instantons and anti-instantons are bound into magnetic dipoles. The presence of layer imbalance leads to an inhomogeneous exciton condensate. Experimental implications will be discussed.

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