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## An example of the convergence of hydrodynamics in strong external fields

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Hydrodynamics has been an extraordinarily useful tool in the analysis of heavy ion collisions. With a definitive signal of the chiral magnetic effect still not shown at RHIC, the community has been focused on understanding each step of the analysis in as much detail as is permitted, relaxing assumptions where necessary. Given the importance of hydrodynamic modeling it is crucially important to understand whether the strong magnetic fields experienced during a heavy ion collision do not disturb the use of the linearized hydrodynamic expansion. In this talk I will make use of the AdS/CFT correspondence to provide an example of how the convergence of the linearized hydrodynamic series changes in response to strong external fields. Working in asymptotically AdS<sub>5</sub> I construct fully backreacted magnetic black brane solutions whose holographic dual is N=4 SYM theory minimally coupled to a global U(1) gauge field. Using recent advances in the literature, I construct fluctuations on this background which correspond to the locations of critical points of hydrodynamic dispersion relations. Given no other obstructions, these points correspond to the radius of convergence of the linearized hydrodynamic expansion of a fluid in strong external magnetic fields.

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