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Magnetic catalysis in curved spacetime

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In this talk, I will shortly discuss the combined effect of magnetic fields and geometry on systems of interacting fermions.

At leading order in the heat-kernel expansion, the infrared singularity (that in flat space leads to the magnetic catalysis) is regulated by the so called 'chiral gap effect' and the catalysis is deactivated by effect of the curvature. I will show that an infrared singularity may reappear from higher-order terms in the heat kernel expansion leading to a novel form of geometrically induced magnetic catalysis (absent in flat space).