1051-81-136 **Guglielmo Fucci*** (Guglielmo_Fucci@Baylor.edu), Department of Mathematics, Baylor University, One Bear Place #97328, Waco, TX 76798-7328. *Non-Perturbative Electrodynamics in Curved Spacetime.*

In this talk we will present very recent results obtained in the ambit of quantum electrodynamics in curved spacetime. We utilize a newly developed non-perturbative heat kernel asymptotic expansion on homogeneous Abelian bundles over Riemannian manifolds in order to compute the one-loop effective action for scalar and spinor fields in curved spacetime under the influence of a strong covariantly constant electromagnetic field. In this framework we derived, in particular, the gravitational corrections, up to linear terms in Riemannian curvature, to Schwinger's result for the creation of particles in an electromagnetic field. (Received August 21, 2009)