Black hole scalar charge from a horizon integral in Einstein-dilaton-Gauss-Bonnet gravity LEO STEIN, Caltech — In beyond-GR theories with a scalar field, a black hole's scalar charge is a crucial quantity for testing the theory. The scalar charge—given by an integral at spatial infinity—controls the dynamics and gravitational radiation of black hole–compact object binaries. Extracting this scalar charge would seem to require solving the field equations for a black hole spacetime. In this talk I will show that in the special case of Einstein-dilaton-Gauss-Bonnet theory, the scalar charge can instead be extracted from a horizon integral. This relationship between an integral at infinity and one on the horizon is reminiscent of mass and spin integrals in GR.

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