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## **Black hole hair formation in shift-symmetric generalised scalar-tensor gravity**

*Tuesday 26 September 2017 15:50 (20 minutes)*

A linear coupling between a scalar field and the Gauss–Bonnet invariant is the only known interaction term between a scalar and the metric that: respects shift symmetry; does not lead to higher order equations; inevitably introduces black hole hair in asymptotically flat, 4-dimensional spacetimes. I will consider a scalar-tensor theory of gravity that includes such a coupling and present results of numerical simulations of hair formation in a static, spherically symmetric background. I will also show that backgrounds describing stellar collapse yield similar field configurations. I will then discuss the physical implications of these results and possible extensions of our work to rotating spacetimes.

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