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Slowly-Rotating Black Hole Solution in Einstein-Dilaton-Gauss-Bonnet Gravity DIMITRY AYZENBERG, NICOLAS YUNES, Montana State Univ — We present a stationary and axisymmetric black hole solution in Einstein-Dilaton-Gauss-Bonnet gravity to quadratic order in the ratio of the spin angular momentum to the black hole mass squared. This solution introduces new corrections to previously found nonspinning and linear-in-spin solutions. The location of the event horizon and the ergosphere are modified, as well as the quadrupole moment. The new solution is of Petrov type I, although lower order in spin solutions are of Petrov type D. There are no closed timelike curves or spacetime regions that violate causality outside of the event horizon in the new solution. We calculate the modifications to the binding energy, Kepler's third law, and properties of the innermost stable circular orbit. These modifications are important for determining how the electromagnetic properties of accretion disks around supermassive black holes are changed from those expected in general relativity.

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