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How quantum black holes can help us to approach a Theory of Everything

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Resumen

Black holes are often regarded as exotic solutions of Einstein's field equations, which form complementary curiosities in the world of elementary objects of the natural world, and it is thought that modern theories of supergravity and superstring theory will automatically fill in the details explaining their behaviour. In this talk we emphasise that the role played by black holes will be much more fundamental than that. Demanding that black holes should behave as respectable physical objects, puts new constraints on our theoretical constructions. Black holes will both absorb and emit particles, and they can only do this without internal conflicts if space and time are allowed to fold up in novel ways.