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Black Hole-Saturn Correspondence

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We discuss the correspondence Between Black holes and Saturons, states that attain the maximal entropy permitted by unitarity. We present the connection within a renormalizable $SU(N)$ invariant theory. We show that the spectrum contains a tower of bubbles representing bound states of $SU(N)$ Goldstones. We argue that a saturated bound state exhibits a striking resemblance with a black hole. The Bekenstein-Hawking formula gives the saturnon entropy. Semiclassically, they possess an information horizon. They evaporate at a thermal rate with a temperature proportional to their inverse radius. The information retrieval time is equal to Page's time. We discuss the fundamental and observational implications of the black hole-saturnon correspondence.

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