

# REVISIT THE IMPORTANCE OF THE BLACK HOLE ACCRETION IN THE RADIATION-DOMINATED UNIVERSE

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Now most of astronomers believe the black hole hypothesis, namely that essentially all the galactic nuclei contain supermassive black holes in their nuclei and that those objects together with their accretion disks or tori are the central engines for most of the powerful activity. Numerical relativists have shown that those supermassive black holes may have been formed through the gravitational collapse of well-developed stellar clusters. Collapsing of stellar clusters, however, needs time for a few billion years, which contradicts the recent observational results of highly-redshifted QSOs. The more observational skills and instruments are developed, the higher the redshifts of the primitive galaxies become, and, even in the low  $H_0$  model of cosmology, we may not be able to explain how supermassive black holes were formed so early. In this presentation we will carefully concentrate on the possibility whether primordial black holes can grow to become supermassive ones or not.