

# Progenitors of compact early-type galaxies

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Compact galaxies are common in high redshift universe. But in the local universe, they are rare and their formation and evolution is still a mystery. We report a new compact galaxy, SDSS J122958.84+000138.0 (SDSS J1229+0001), which has unique morphological and stellar population properties that are rare in observations of galaxies in the nearby universe. Located in a fairly low density environment, morphologically it is akin to a typical early-type galaxy as it has a smooth appearance and red colour. But, interestingly, it possesses centrally concentrated star forming activity with a significant amount of dust. We find that the SDSS J1229+0001 has dust mass  $M_{\text{dust}} = 5.1 \times 10^5 M_{\text{sun}}$  with a dust to stellar mass ratio  $\log(M_{\text{dust}}/M_{\text{star}}) = -3.5$ . While the observed stellar population properties are - to some extent - similar to that of a typical S0 galaxy, a unified view from stellar population and structural properties may suggests that SDSS J1229+0001 is a smoking gun example of a compact early-type galaxy in formation similar in high-redshift universe.