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Title:	Exotic image formation in strong gravitational lensing by clusters of galaxies – III. Statistics with HUDF
Authors:	Meena, Ashish Kumar (/jspui/browse?type=author&value=Meena%2C+Ashish+Kumar) Bagla, Jasjeet Singh (/jspui/browse?type=author&value=Bagla%2C+Jasjeet+Singh)
Keywords:	Exotic image strong gravitational clusters of galaxies HUDF
Issue Date:	2022
Publisher:	Oxford Academic
Citation:	Monthly Notices of the Royal Astronomical Society, 515(3), 4151-4160.
Abstract:	We study the image formation near point singularities (swallowtail and umbilics) in the simulated strongly lensed images of Hubble Ultra Deep Field (HUDF) by the Hubble Frontier Fields (HFF) clusters. In this work, we only consider nearly half of the brightest (a total of 5271) sources in the HUDF region. For every HFF cluster, we constructed 11 realizations of strongly lensed HUDF with an arbitrary translation of the cluster centre within the central region of HUDF and an arbitrary rotation. In each of these realizations, we visually identify the characteristic/exotic image formation corresponding to the different point singularities. We find that our current results are consistent with our earlier results based on different approaches. We also study time delay in these exotic image formations and compare it with typical five-image geometries. We find that the typical time delay in exotic image formations is an order of magnitude smaller than the typical time delay in a generic five-image geometry.
Description:	Only IISER Mohali authors are available in the record.
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