

VERY MASSIVE STARS AT COSMOLOGICAL DISTANCES

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Investigating tiny structures ($<100\text{pc}$ size) inside of the galaxies until recently was only feasible at lower redshift. Thanks to the new stellar evolutionary models and synthetic spectra of very massive stars (VMS, $M > 150M_{\odot}$) as well as the availability of precise lensed models we can properly interpret and analyze spectroscopic properties of a young massive star cluster (YMC) at cosmological distances. I will present the YMC dubbed as 5.11 detected at $z=2.37$ and located in Sunburst Lyman-continuum (LyC) galaxy. We investigated and confirm the presence and segregation of VMS in the central parts of the 5.11 YMC. Furthermore, we find that the fraction of LyC radiation generated from the VMS is not negligible. Our estimates indicate that YMC harbor around 400 VMS which is 1% of the total population of O-type stars in the cluster (stars capable of producing LyC radiation). Moreover, we estimated that 15% of LyC radiation emitted by YMC is produced by VMS and the rest is generated from less massive O-type stars.