Contribution ID: **23** Type: **not specified**

CONSTRAINING PHOTOMETRIC REDSHIFTS OF QUASARS USING VARIABILITY

Thursday 25 July 2024 09:55 (20 minutes)

Quasars are known for their intrinsic variability which is stochastic at several time scales. Studying these objects in very large samples helps to improve the statistics and allows systematic studies of the time scales of variability and their relation with the physical mechanisms driving these flux changes. With the upcoming large time domain photometric surveys such as the Vera C. Rubin LSST, we expect to discover at least a few millions of new AGN. The large number of sources precludes the possibility of exhaustive spectroscopic follow-up. As such, candidate confirmation and estimation of their redshifts from photometric data presents an active research problem. I will present ongoing research results of a novel technique for redshift estimation that couples cosmological time dilation with intrinsic variability for inference. We used MCMC iterations, effectively modelling the optical light curves of AGN by constraining the structure function as means to obtain their redshift priors. I will present a validation of this method, conducted using a well-sampled light curve from the Zwicky Transient Facility (ZTF) and from simulations as a proof of concept of our approach which demonstrates that the obtained redshift priors align very well with spectroscopically determined redshift values.

Funding request, please specify

2200 Euros. As a third-year Ph.D. candidate from a Private University in Santiago, our university does not offer travel grants to its students, and I find myself in the challenging position of having missed the deadlines for government funding schemes. This Annual meeting is extremely important for my thesis work as this work is involved within the photo-z subgroup of our AGN science collaboration. Hence this conference gives me the opportunity to present my research findings, discuss with my collaborators, and network with renowned experts in our field is important to the development of my thesis and of future collaborative endeavours. I have asked for 2200 Euros in total which is by estimating about 1600 Euros as Airfare , 450 for the accommodations and travel and 150 Euros covering my registration fee for the conference. Thank you for considering of my request and I am happy to provide any additional information.

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Session Classification: Photometric Redshifts