

## 2020:



## **BH Mass, Jet and Accretion Disk Connection: An Analysis of Radio-loud and Radio-quiet Quasars**

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### Abstract

This study shows that radio-loud fraction (RLF) increases for increasing full width half maximum (FWHM) velocity of the H $\beta$  and MgII broad emission line. Our data has been obtained from Shen et al. (2011) catalogue. Our sample consists of quasars with magnitude less than 19.1 and limited upto redshift 0.75 for H $\beta$  and 1.9 for MgII. We are getting RLF for the H $\beta$  and MgII broad emission line FWHM greater than 15000km/s is 0.577 and 0.408 respectively. To investigate the reason, in this preliminary study we analyse various properties like bolometric luminosity, optical continuum luminosity, black hole (BH) mass and accretion rate of RL quasars (RLQs) and RQ quasars (RQQs) sample which have FWHM greater than 15000km/s (High Broad Line or HBL).



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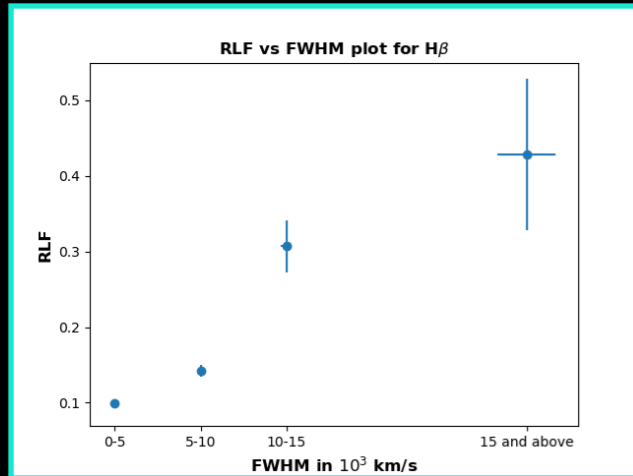
# Main Question And Our Approach

- Surveys have shown RLQs constitute 10% of the total quasar population and rest are RQQs. But we don't know if they are consistent in different parameter spaces.
- To check that we plotted RLF with FWHM of broad H $\beta$  and MgII emission line and we have seen that RLF is increasing with FWHM for both the lines.
- To look more into it, we have compared the fundamental properties like bolometric luminosity, BH mass, optical continuum luminosity and accretion rates of RLQs and RQQs in our HBL sample for both the lines.

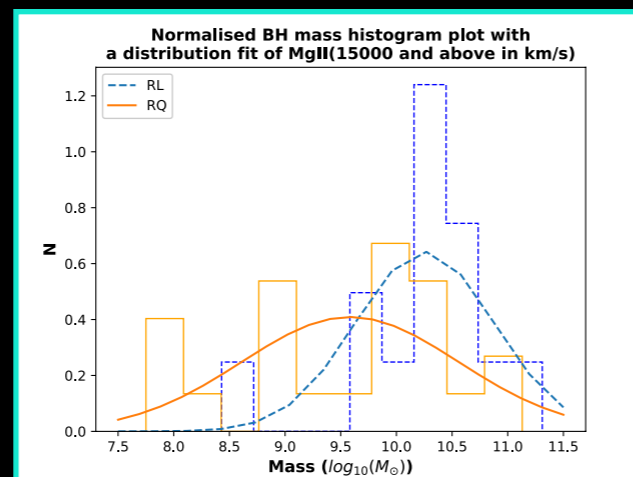
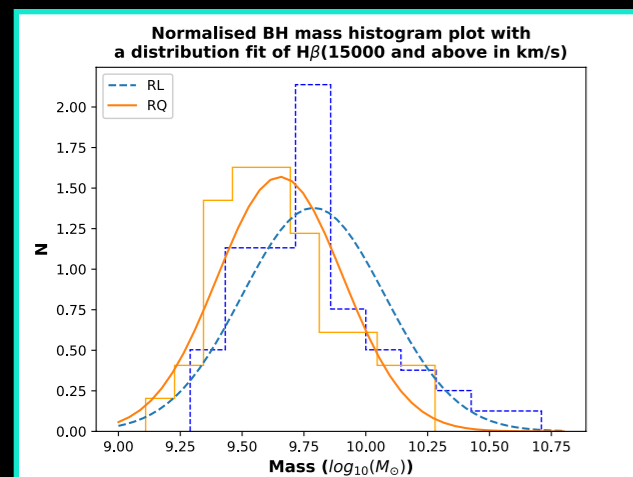
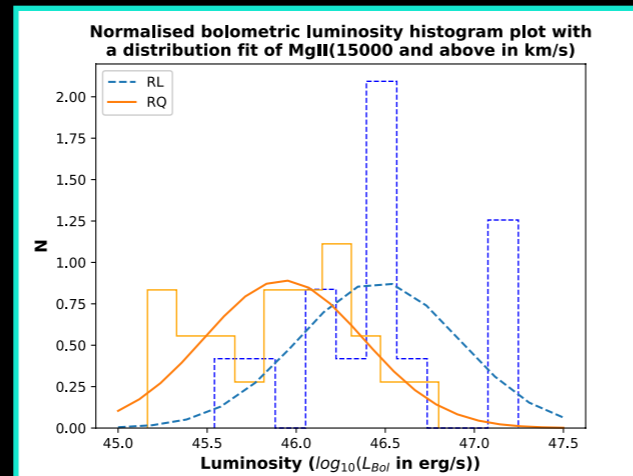
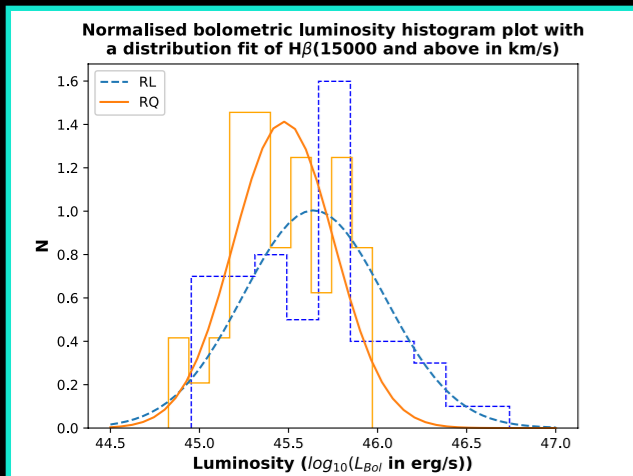
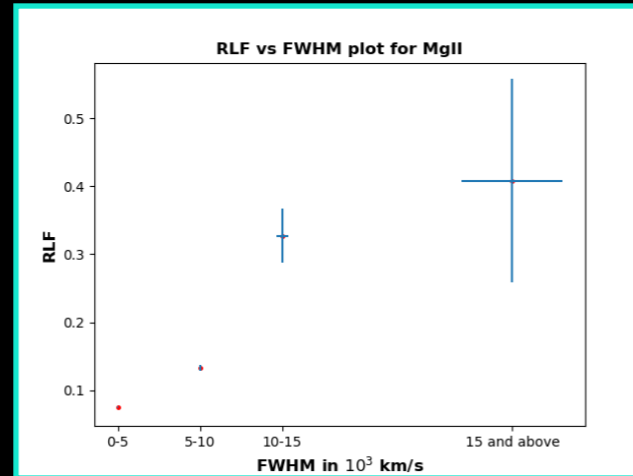
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# Results

## H $\beta$



## MgII



# Conclusions

- RLF is increasing with FWHM.
- RLQs are intrinsically brighter than RQQs.
- Higher mass objects are expected to produce more powerful jets. So BH mass and jet production can be connected.
- Connection between accretion disk and jet can be inferred.

## References

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