X-ray Properties of Intermediate Mass Black Holes in Dwarf AGN

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AGNs

- 1960s
- Galaxies of high luminosity
- Powered by accretion around a supermassive black hole
Accretion

• The infall of gas into a gravitating system
• Conservation of angular momentum
• Frictional effects
• Brighter than any star
• More efficient than nuclear fusion
The Problem

- QUASARS!
- Most distant has $z=7.1$
- Formed within the first 800 million years after the Big Bang
- A BH could only become this massive if it were accreting at maximum
- So, we look towards intermediate mass black holes (IMBHs) for answers
IMBHs

- $10^5$-$10^6 \text{ M}_\odot$
- Closer to the mass that BHs were formed at
- See if they behave like scaled down versions of supermassive BHs
- 6 of these IMBHs have previously been analyzed

NGC 4395  GALEX/NASA
Adding to the Sample of Objects

- 8 additional SDSS objects
- Analyze their X-ray properties
- Variance
- Spectral properties
- Data obtained from XMM-Newton
XMM-Newton

- Launched by European Space Agency in 1999
- X-rays blocked by atmosphere
- Three X-ray detectors and an optical monitor
Conclusion

• We will be analyzing 8 objects to add to the 6 already analyzed
• The hope is that they will behave as expected of scaled down versions of Supermassive BHs
• Shed light on the understanding of the more massive BHs