

Black hole spin really does affect outflows, probably

Rebecca J. Smethurst,^{1,2}★ Chris J. Lintott,² and Brooke D. Simmons³

¹*ChristChurch, Oxford*

²*Department of Physics, University of Oxford, Keble Road, Oxford, OX1 3RH*

³*University of Lancaster, Up North.*

Accepted XXX. Received YYY; in original form ZZZ

ABSTRACT

The relationship of the spin of supermassive blackholes and their propensity to power outflows is a much debated one. The spin of a black hole can be assumed to be a product of its accretion history; accretion from a well-ordered disk will tend to spin up the black hole while growth through disruptive events such as major mergers will be less effective at increasing the angular momentum. We use a sample of ‘bulgeless’ galaxies which are maximally disk dominated and thus which have not undergone a major merger to test the idea that black holes with greater spins are more likely to power outflows. We show that [Haven’t done the work yet].

Key words: keyword1 – keyword2 – keyword3

1 INTRODUCTION

Firstly, a bit about the importance of outflows.

Then we need to justify/discuss the purported connection between spin and outflows.

Then we need to discuss bulgeless galaxies, and question whether we can say something about their black hole spin.

2 METHODS

2.1 Sample selection

Including control sample

2.2 How to spot an outflow

3 RESULTS

Including a vaguely plausible statistical test

4 CONCLUSION

This looks promising - proper work with NuStar needed

ACKNOWLEDGEMENTS

Thanks to people.

★ E-mail: rebecca.smethurst@chch.ox.ac.uk (RJS)

REFERENCES

- Author A. N., 2013, *Journal of Improbable Astronomy*, 1, 1
Others S., 2012, *Journal of Interesting Stuff*, 17, 198

APPENDIX A: SOME EXTRA MATERIAL

If you want to present additional material which would interrupt the flow of the main paper, it can be placed in an Appendix which appears after the list of references.

This paper has been typeset from a T_EX/L^AT_EX file prepared by the author.