An improved classification scheme for distinguishing NEOs from MBAs
ASTR 597A Final Project

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1. INTRODUCTION

- Explain why were care about NEOs

- Point out that LSST is going to make detections explode

- Highlight that `digest2` (Keys et al. 2019) isn't ready for the MBA background (Fig. 1)

- Explain how using more than simple orbital parameters could improve matters

2. METHODS

- MBAs are constrained to lie in the ecliptic plane - we can leverage this

- Tracklet selection conditions

- Ecliptic latitude split the population well directly because of this

- Direction of motion relative to the ecliptic plane works too since closer things aren't constrained as strongly

- Show plots of both of them

3. RESULTS

- Combine all 3 into 1 score, plot that up, compare to earlier one

- Decide on threshold and analyse performance with contingency matrix

- (Consider whether we could weight the different parameters differently to improve matters)

4. DISCUSSION

- Recommend sorting rather than just a threshold

- Coordination between groups will be important NEOFixer

5. CONCLUSION

- Point out whether we did better :shrug:

REFERENCES

Keys, S., Vereš, P., Payne, M. J., et al. 2019, PASP, 131, 064501, doi: 10.1088/1538-3873/ab1157
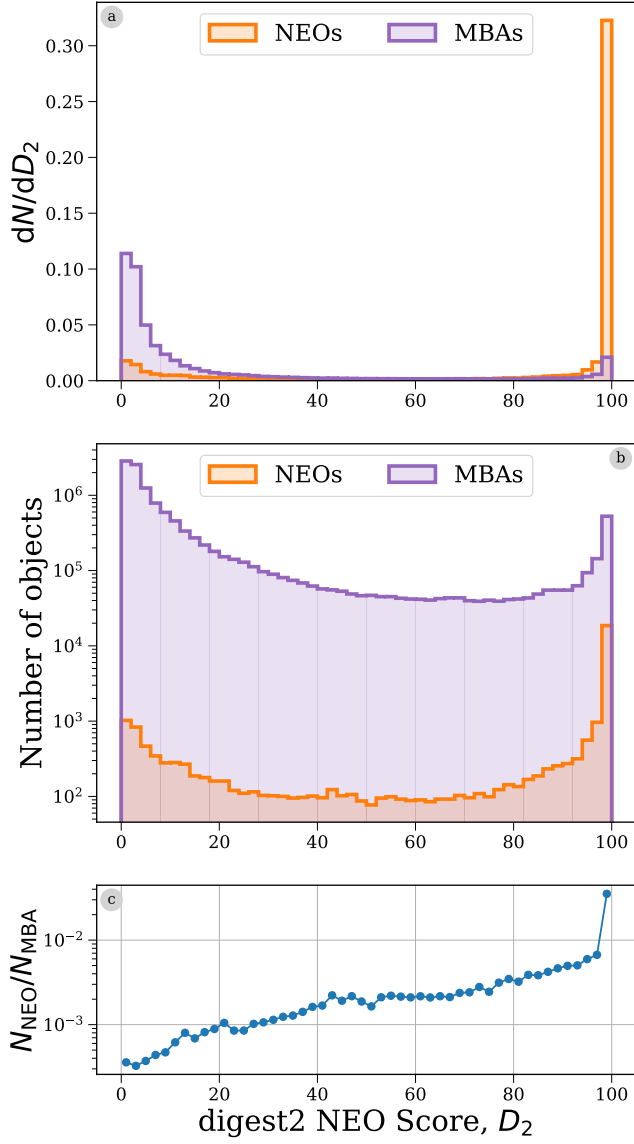
Figure 1. `digest2` scores for all NEOs and MBAs observed in the first year of our simulated LSST observations. **(a)** normalised histograms of `digest2` scores, **(b)** the same histograms un-normalised **(c)** ratio of the histograms in (b). Note that the latter two panels are on a logarithmic scale.

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