



A companion tool to FLASHfinder to automatically separate true detections from artefacts

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The First Large Absorption Survey in HI (FLASH) is an untargeted widefield survey for HI absorption between redshifts of 0.42 and 1.0, across the entire sky south of Declination +18 degrees from spectra of 100,000 bright continuum sources, using the Australian SKA Pathfinder (ASKAP) telescope [1]. The FLASH team performs automated source-finding using the FLASHfinder – an automated source finder based on Bayesian methods to identify absorption candidates [2]. However, verification of true source detections from the list of candidates is currently performed manually by the team and true detections are currently outnumbered by false positives. Here we present a new companion tool to FLASHfinder that will help distinguish between true absorption detections and artefacts (or false positives), based on simple machine learning methods to ensure efficiency and reproducibility. Repeated detections of the same candidates from the ASKAP pilot observations help characterise the consistency of our results. We show that the use of such a tool will help further source finding efficiency and characterisation of artefacts that are inherent to the ASKAP FLASH observations.

References

- 1 J. R. Allison, E.M. Sadler et al , “The First Large Absorption Survey in HI (FLASH): I. Science goals and survey design”, *Publications of the Astronomical Society of Australia*, 11, 4, April 2022, pp. 138-139, <https://doi.org/10.1017/pasa.2022.3>.
- 2 J. R. Allison, E. M. Sadler & M. T. Whiting, “Application of a Bayesian Method to Absorption Spectral-Line Finding in Simulated ASKAP Data”, *Publications of the Astronomical Society of Australia*, 29, 3, October 2012, pp. 221-228 DOI: 10.1071/AS11040