



# ATM: AN OPEN-SOURCE TOOL FOR ASTEROID THERMAL MODELING

Joachim Moeyens<sup>1</sup>, Dr. Nathan Myhrvold<sup>2</sup> & Prof. Željko Ivezić<sup>1</sup>

<sup>1</sup> DiRAC Institute / Astronomy Department, University of Washington, Seattle, WA, USA

<sup>2</sup> Intellectual Ventures, Bellevue, WA, USA

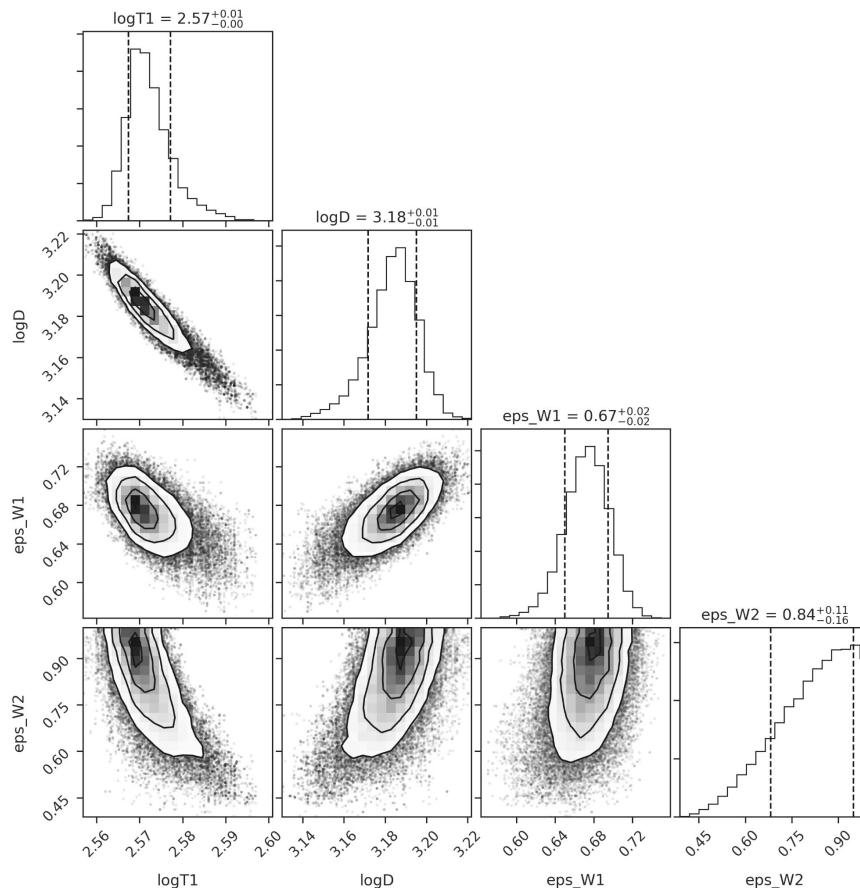
# Asteroid Thermal Modeling (ATM)

Open-source Python tool for fitting of asteroid flux measurements with static thermal models (NEATM, FRM, STM)

Capability of Markov Chain Monte Carlo (MCMC) sampling of the posterior probability density function

Validated against sample of NEOWISE (2016) diameters and IR albedos

Diameters agree to within sub-percent bias (0.4%) and scatter of only 5.5%



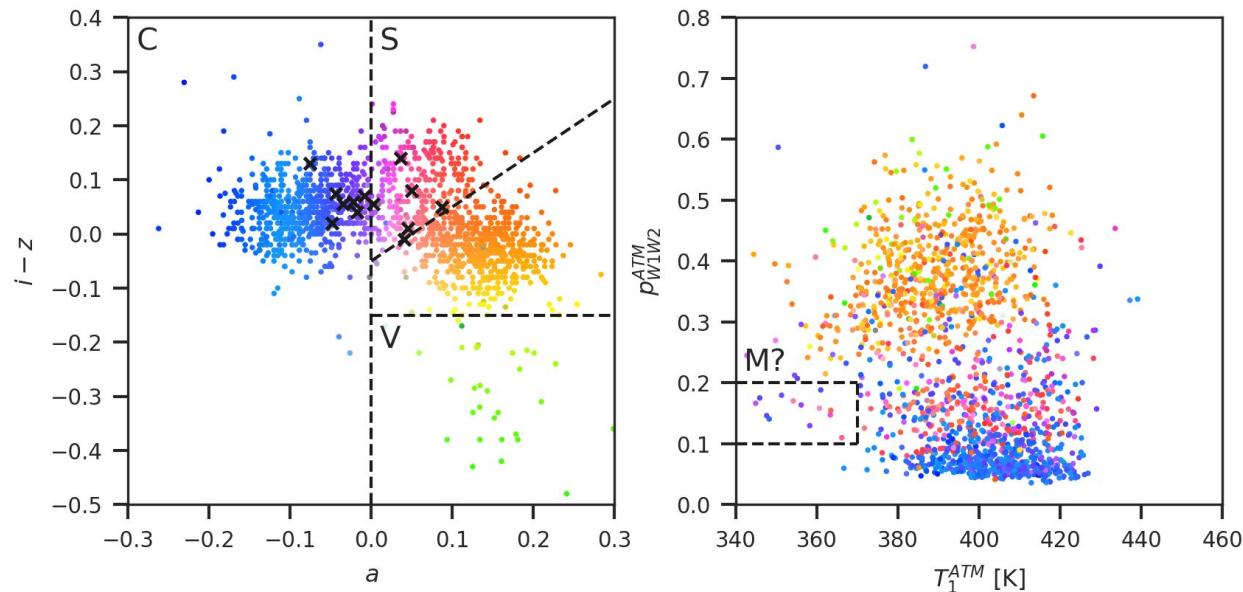
Posterior probability density function for sample object observed by WISE. Created using [single\\_object\\_54789.ipynb](#).

# Finding Metallic Asteroids with ATM

High beaming parameter with low IR albedo are potential metal-rich asteroids (Harris and Drube 2014)

High beaming parameter corresponds to low characteristic temperature  $T_1$

**Identified 13 metallic asteroid candidates using ATM thermal fitting parameters**



Simple selection criteria using ATM thermal modeling parameters can be used to identify metallic asteroid candidates. Created using [analysis\\_SDSS.ipynb](#).

# Further Information



Reference Paper:  
<https://doi.org/10.1016/j.icarus.2019.113575>



Code, Notebooks, Data:  
<https://github.com/moeyensj/atm>  
[https://github.com/moeyensj/atm\\_notebooks](https://github.com/moeyensj/atm_notebooks)  
[https://github.com/moeyensj/atm\\_data](https://github.com/moeyensj/atm_data)



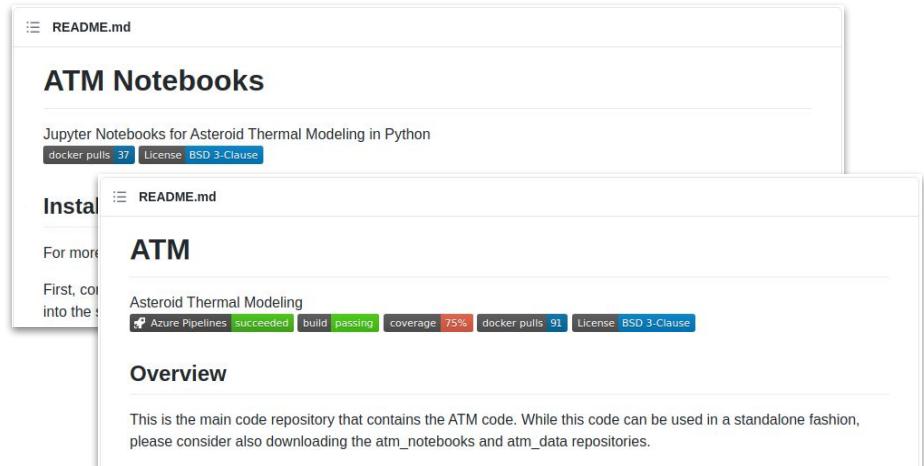
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ATM: An open-source tool for asteroid thermal modeling and its application to NEOWISE data

Joachim Moeyens<sup>a,\*</sup>,<sup>1</sup> Nathan Myhrvold<sup>b</sup>, Željko Ivezić<sup>a</sup>

<sup>a</sup> Department of Astronomy and the DIRAC Institute, University of Washington, 3910 15th Avenue NE, Seattle, WA 98195, USA  
<sup>b</sup> Intellectual Ventures, Bellevue, WA 98005, USA

Check for updates



README.md

## ATM Notebooks

Jupyter Notebooks for Asteroid Thermal Modeling in Python

docker pulls 37 License BSD 3-Clause

Install

For more information, see the [README.md](#).

First, clone the repository into the `atm` directory.

README.md

## ATM

Asteroid Thermal Modeling

Azure Pipelines succeeded build passing coverage 75% docker pulls 91 License BSD 3-Clause

### Overview

This is the main code repository that contains the ATM code. While this code can be used in a standalone fashion, please consider also downloading the `atm_notebooks` and `atm_data` repositories.