# Delsimi: A Simulation Code for Delphini-1

## Software and Satellite Operations

Jonas Svenstrup Hansen

(astronomy master's student)

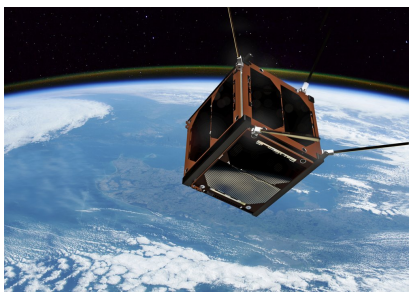
Institut for fysik og astronomi

Aarhus Universitet

19. februar 2018

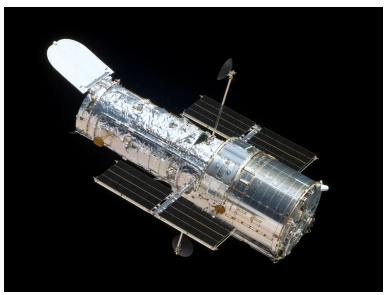
# Delsimi: Justification

# Delsimi: Justification



Gomspace, Wiegaarden, ESA

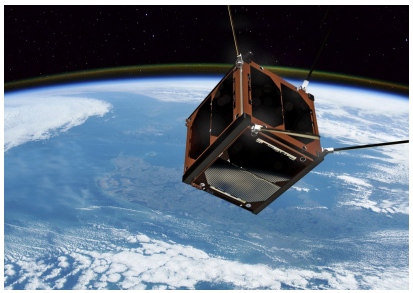
$>$



Hubble Space Telescope, NASA

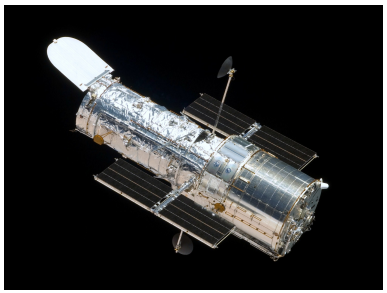
?

# Delsimi: Justification



Gomspace, Wiegaarden, ESA

$>$

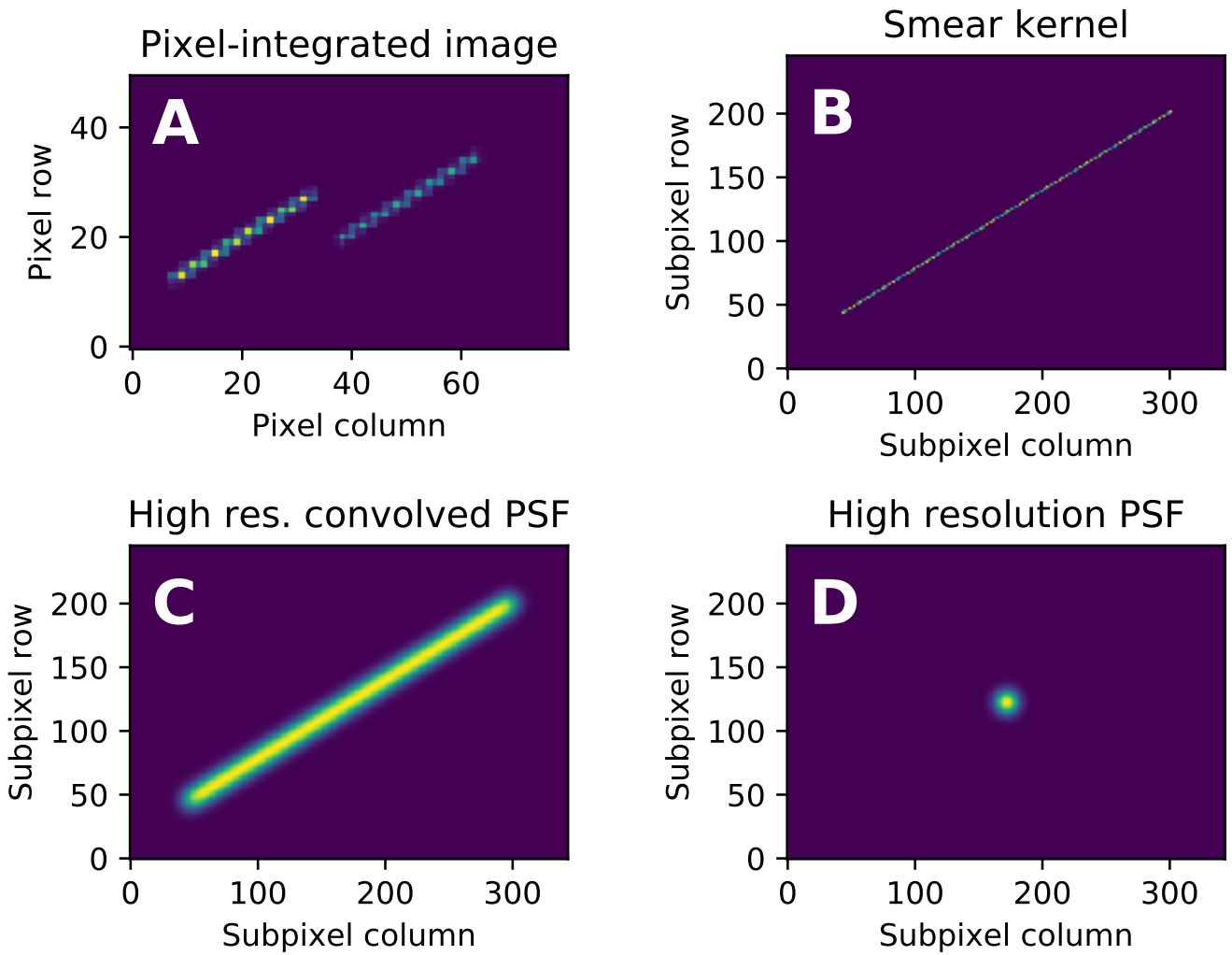


Hubble Space Telescope, NASA

?

photometry performance

# Star Simulation



# Star Trail Method

## Convolution

Pros:

- High accuracy
- Custom PSF

Cons:

- Long computing time
- No variable PSF

## Evaluation

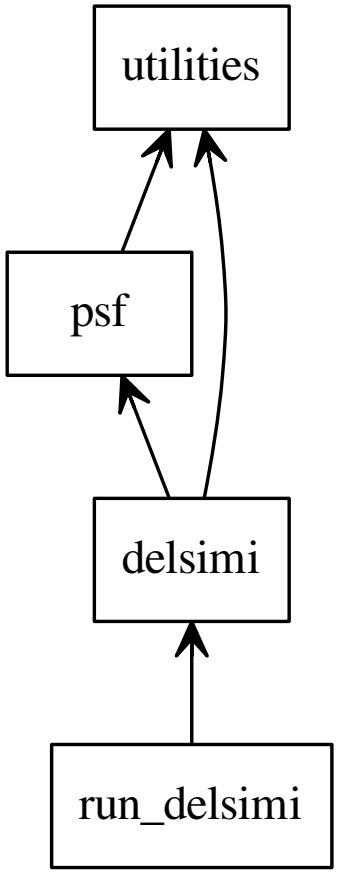
Pros:

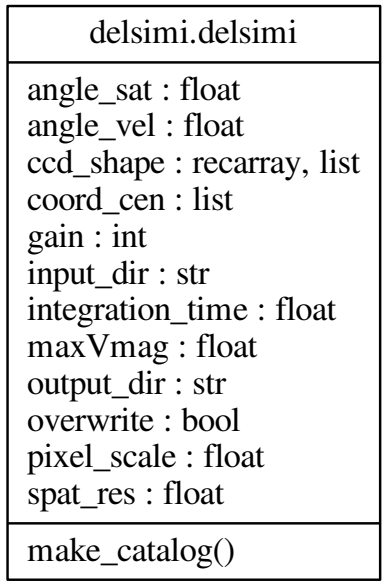
- Fast computing time
- Custom PSF
- Variable PSF

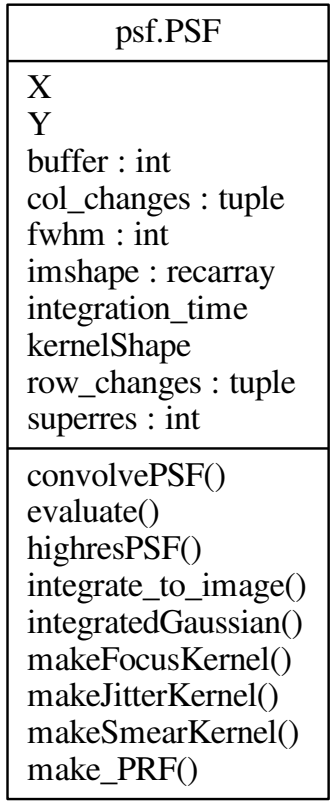
Cons:

- Not as accurate

# Delsimi Code Structure



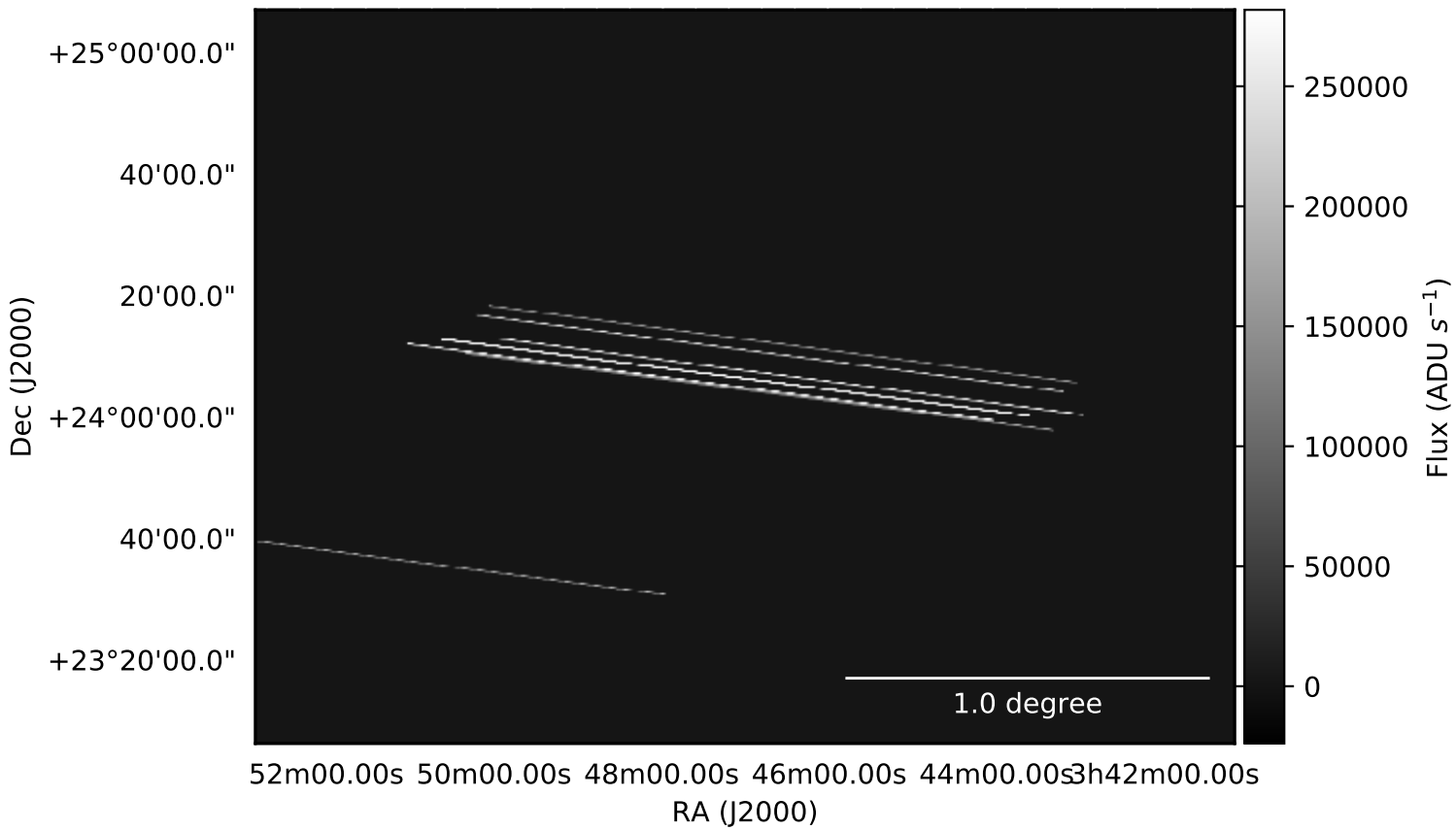



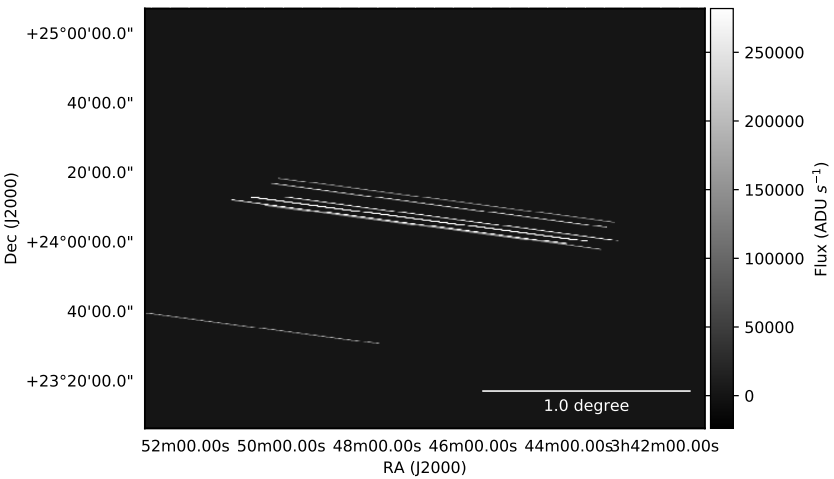

(created with: `pyreverse -my -A -o pdf -p <name> **.py`)

# Output: FITS Image

$V < 5,\ t = 100\,\mathrm{s}$



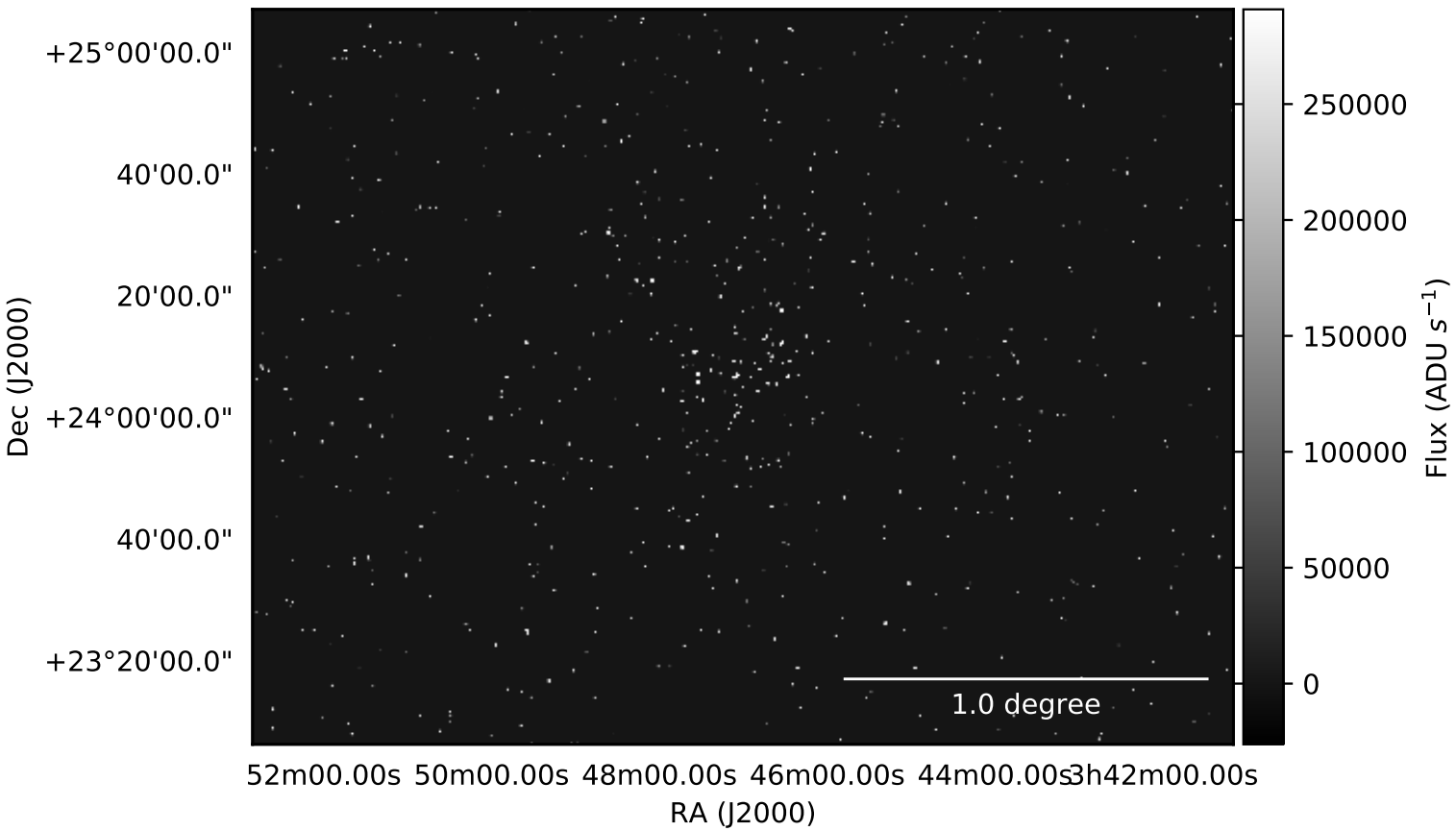
# Output: FITS Image




(Aladin sky atlas)

# Output: FITS Image

$V < 10,\ t = 0.1\,\mathrm{s}$



# Future Extensions

## Added since protocol:

performance: Evaluation to replace convolution

application: Catalog stars (astroquery)

## Still needed:

accuracy: Realistic magnitude to flux conversion

accuracy: More realistic noise

structure: Color and position variable PSF

# Source Code and Protocol

https://github.com/jonasshansen/delsimi