



NRC-CMRC



# Births and deaths of stars in the Magellanic Clouds Speckle images of R136

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*Gemini Science Meeting, Seoul, 2022*









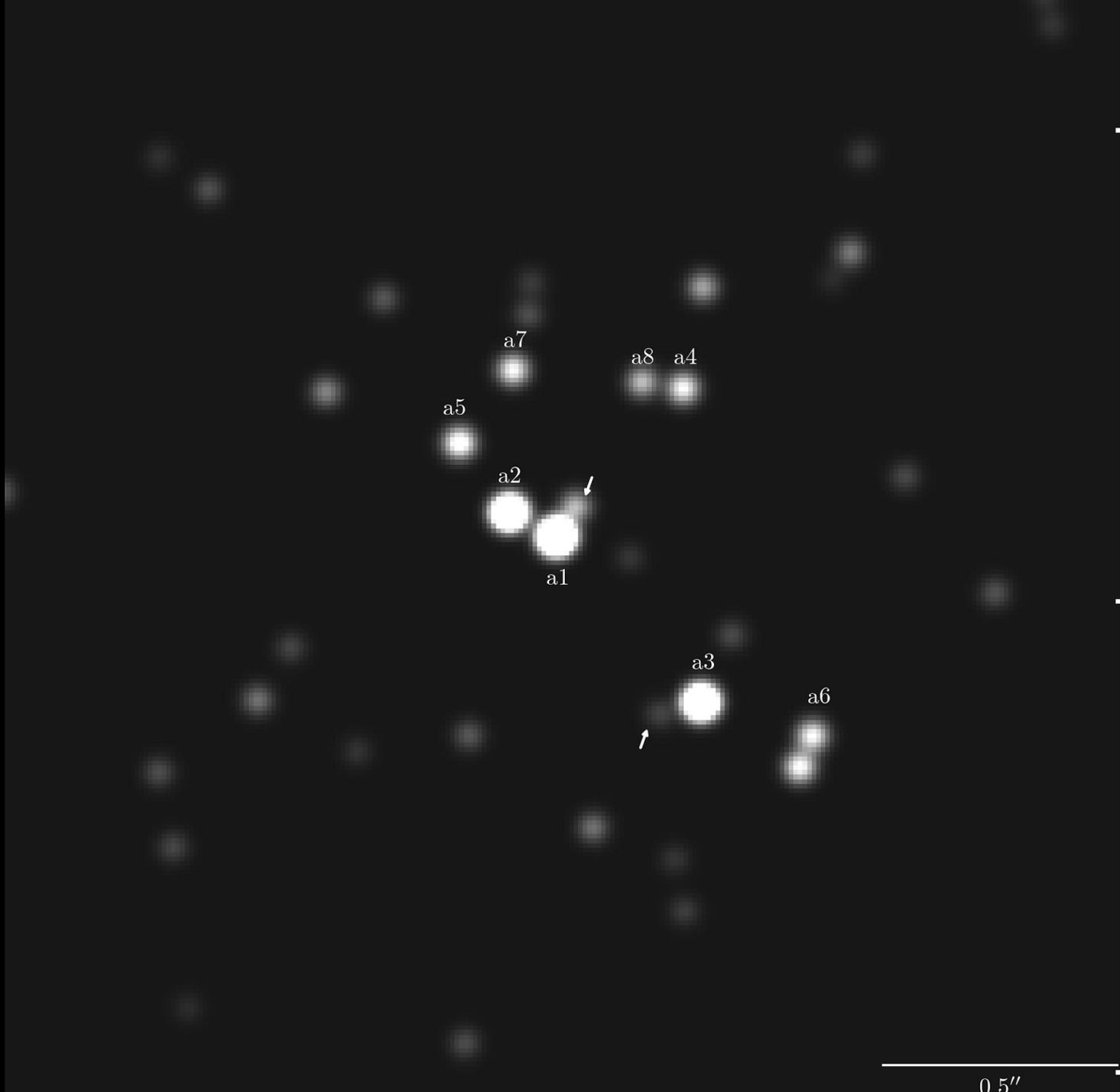




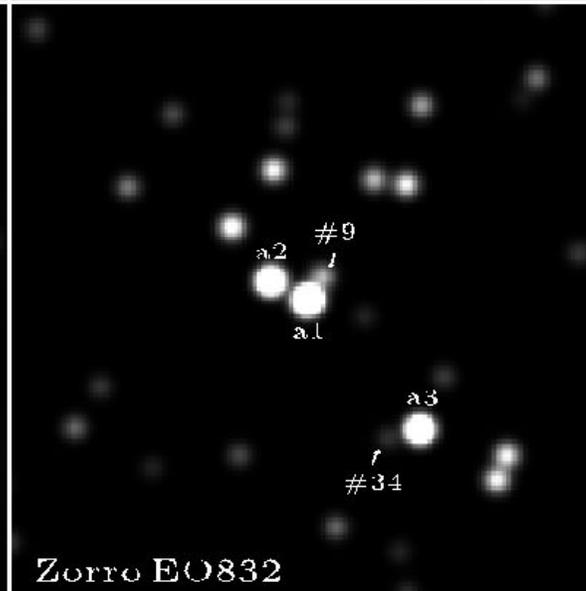
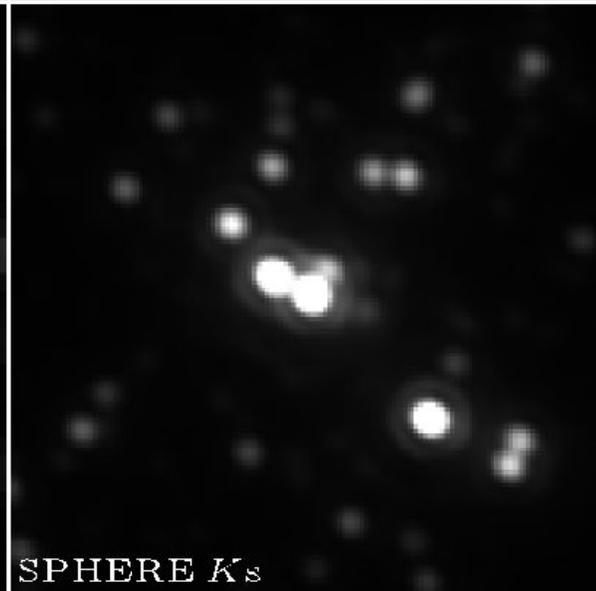
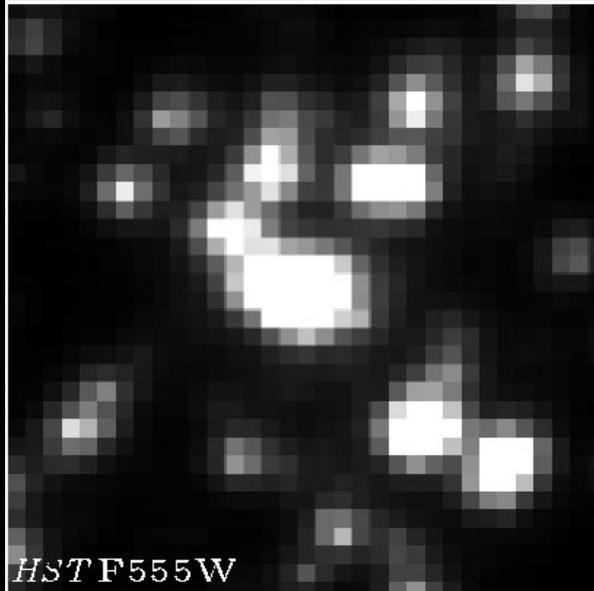
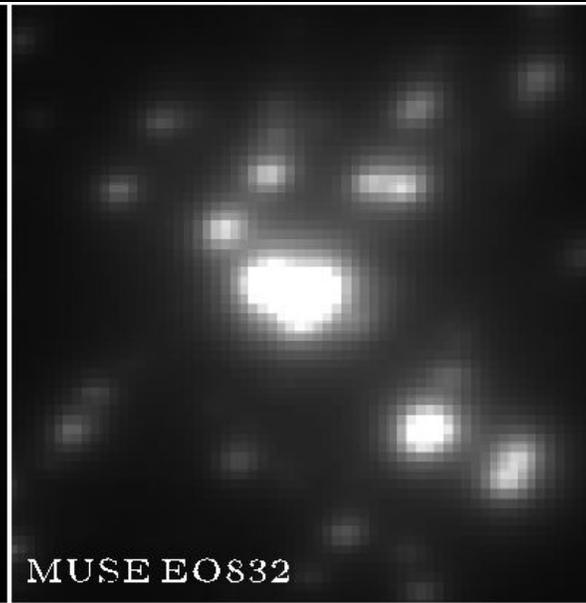
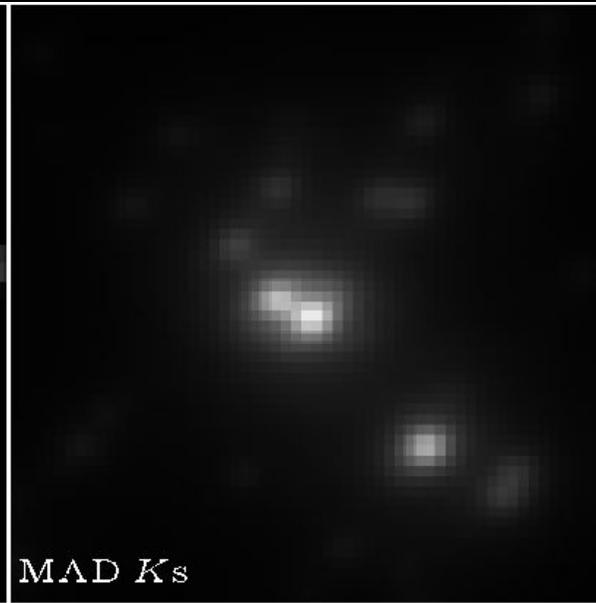
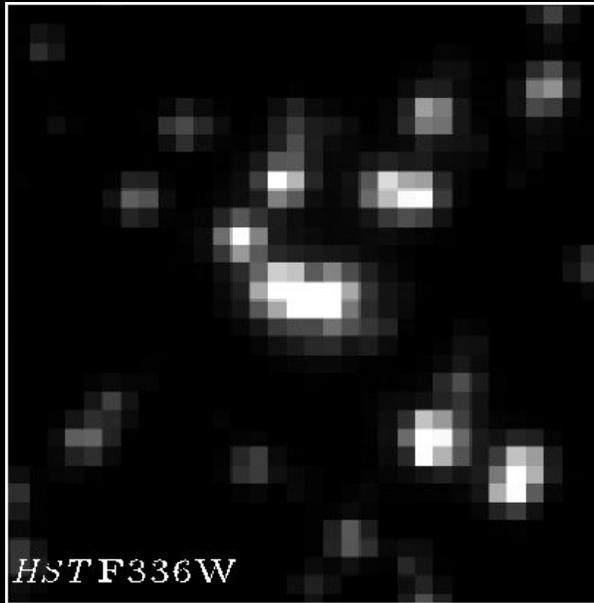


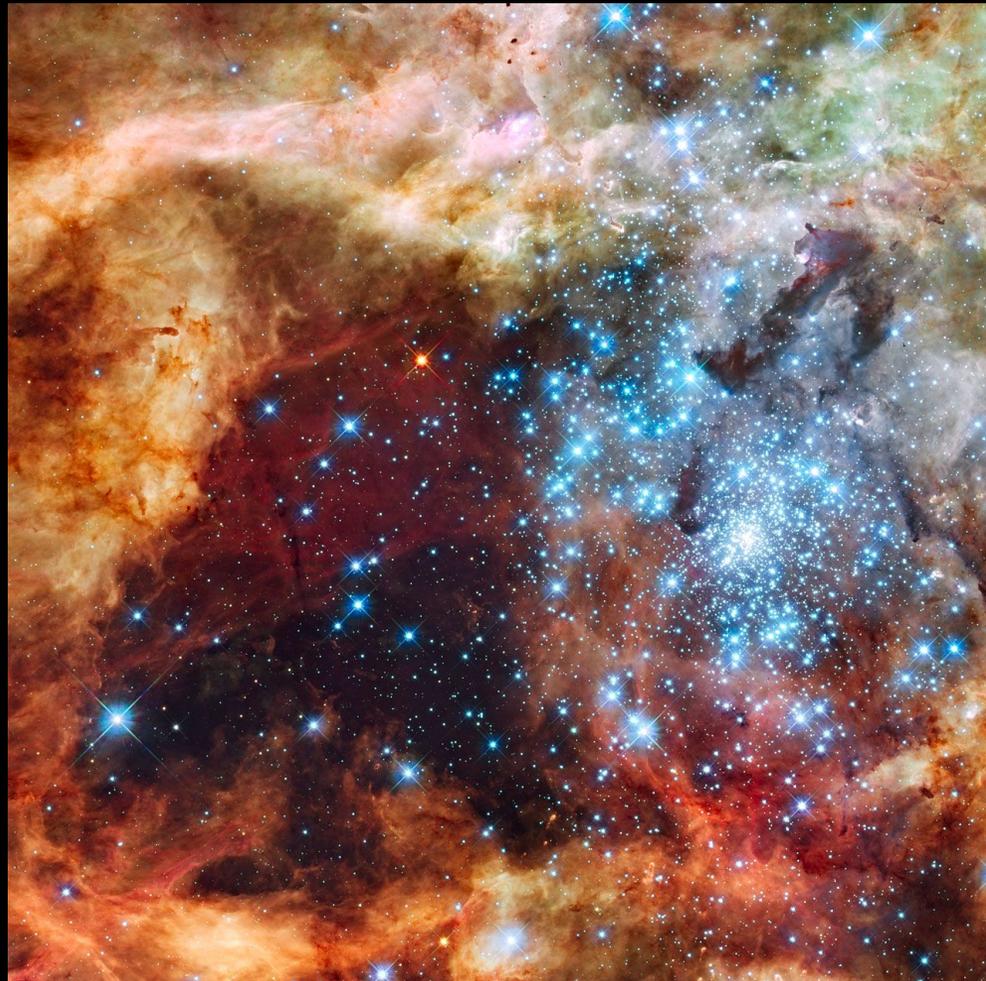






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Monthly Notices

of the

ROYAL ASTRONOMICAL SOCIETY

Mon. Not. R. Astron. Soc. **408**, 731–751 (2010)

doi:10.1111/j.1365-2966.2010.17167.x

## The R136 star cluster hosts several stars whose individual masses greatly exceed the accepted $150 M_{\odot}$ stellar mass limit

Paul A. Crowther,<sup>1\*</sup> Olivier Schnurr,<sup>1,2</sup> Raphael Hirschi,<sup>3,4</sup> Norhasliza Yusof,<sup>5</sup>  
Richard J. Parker,<sup>1</sup> Simon P. Goodwin<sup>1</sup> and Hasan Abu Kassim<sup>5</sup>

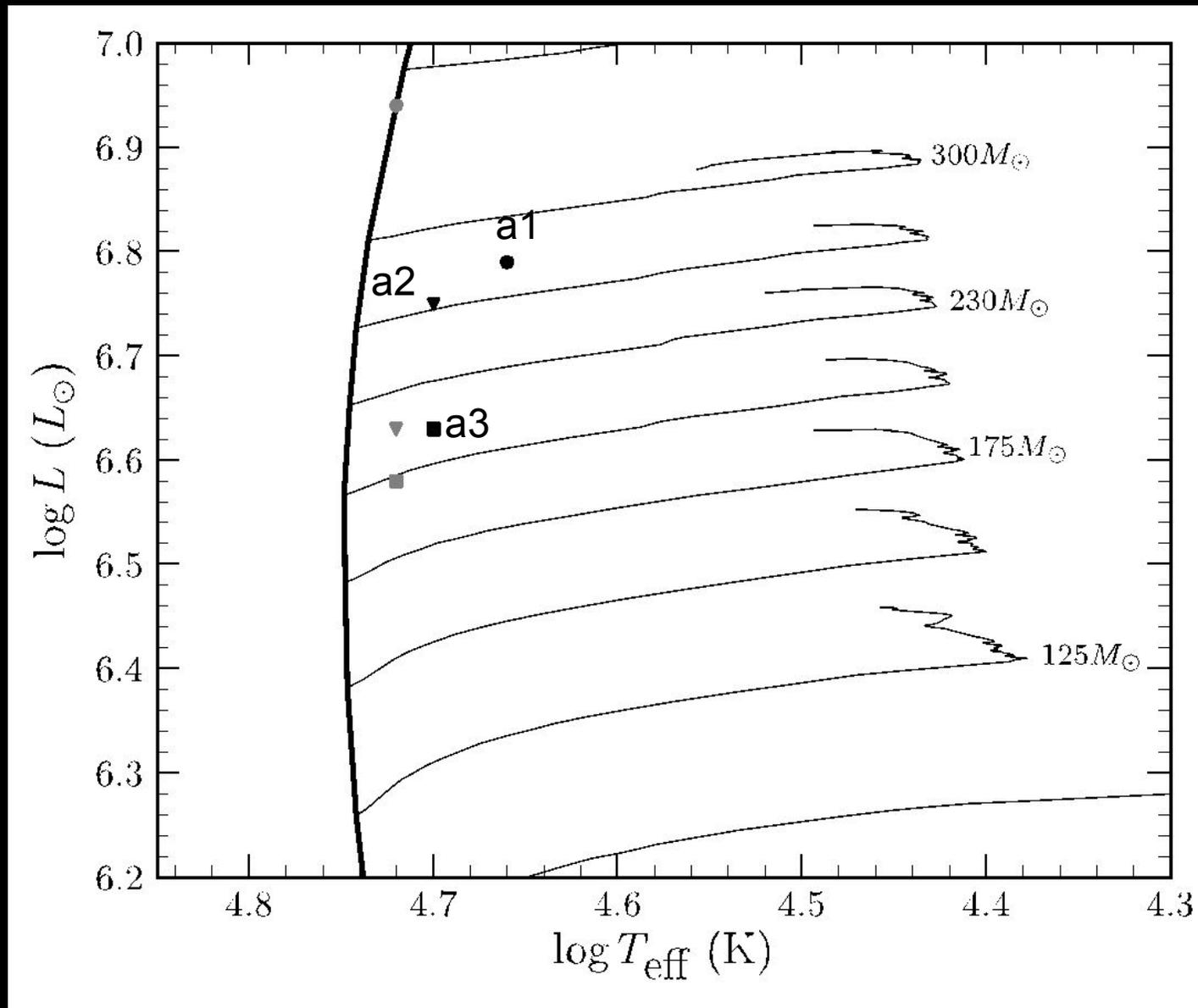
MNRAS **000**, 1–21 (2020)

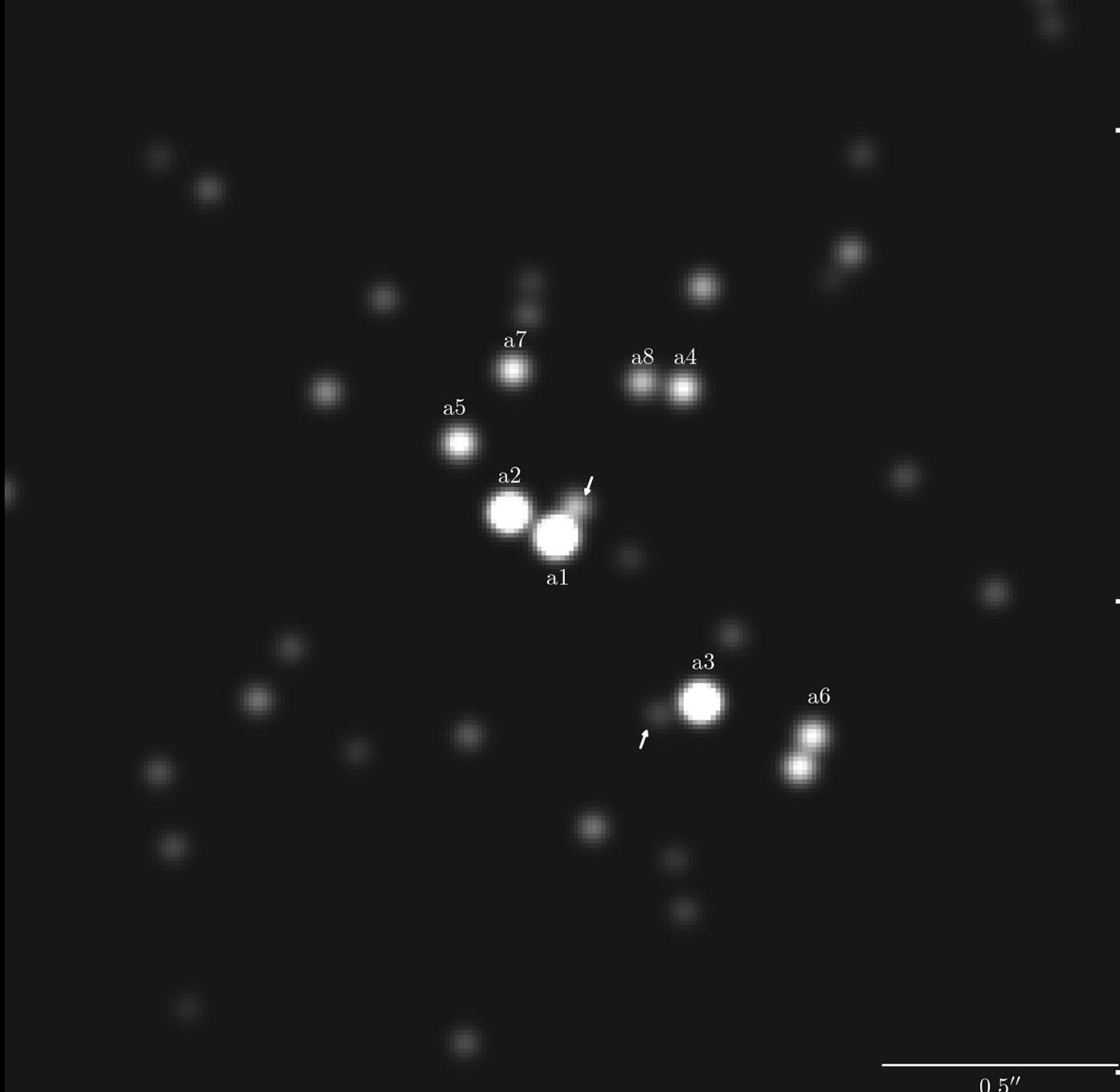
Preprint 14 September 2020

Compiled using MNRAS L<sup>A</sup>T<sub>E</sub>X style file v3.0

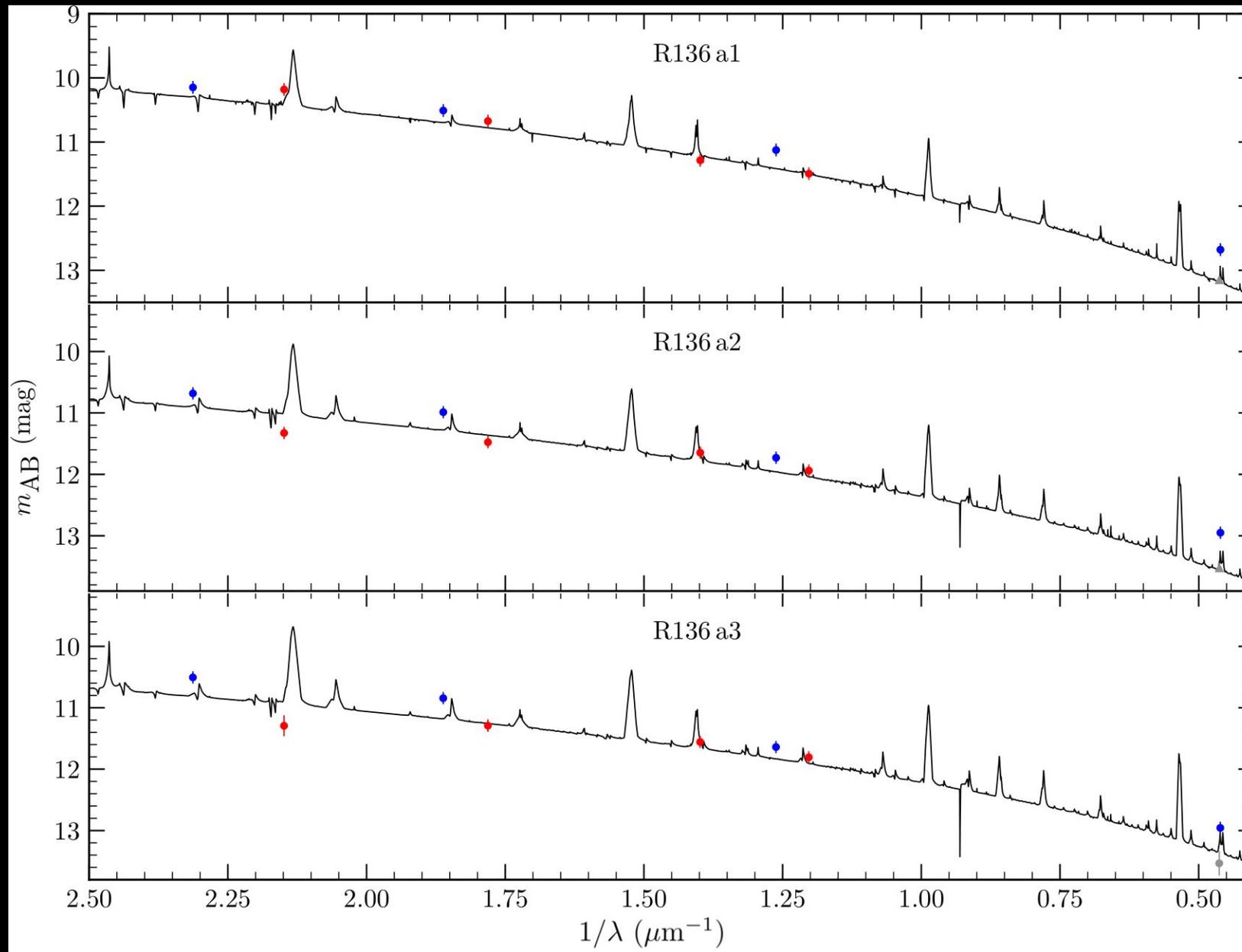
## The R136 star cluster dissected with *Hubble Space Telescope*/STIS. II. Physical properties of the most massive stars in R136

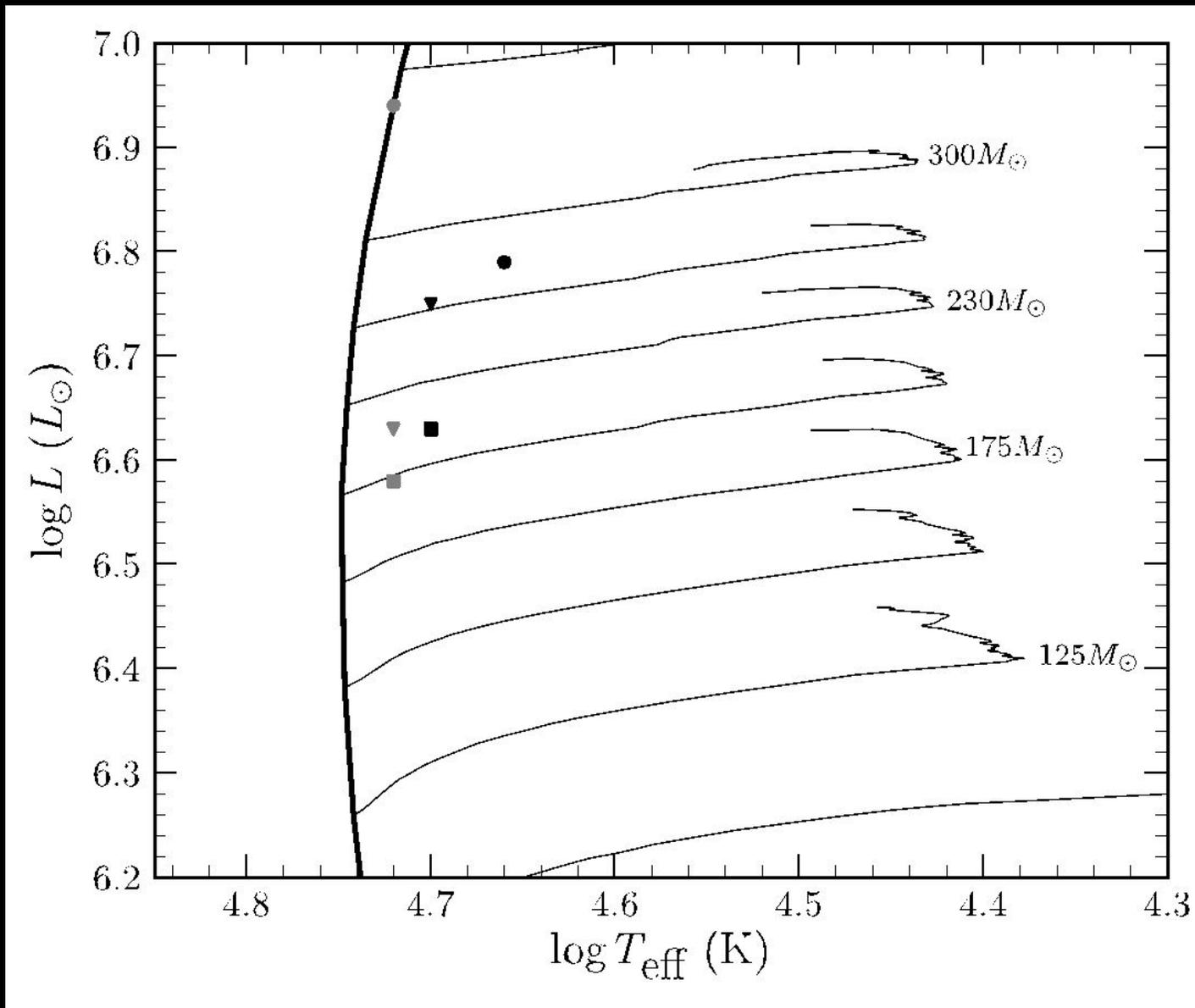
Joachim M. Bestenlehner,<sup>1\*</sup> Paul A. Crowther,<sup>1</sup> Saida M. Caballero-Nieves,<sup>1,2</sup>  
Fabian R. N. Schneider,<sup>3,4</sup> Sergio Simón-Díaz,<sup>5,6</sup> Sarah A. Brands,<sup>7</sup> Alex de Koter,<sup>7,8</sup>  
Götz Gräfener,<sup>9</sup> Artemio Herrero,<sup>5,6</sup> Norbert Langer,<sup>9</sup> Daniel J. Lennon,<sup>5,6</sup>  
Jesus Maíz Apellániz,<sup>10</sup> Joachim Puls,<sup>11</sup> and Jorick S. Vink<sup>12</sup>

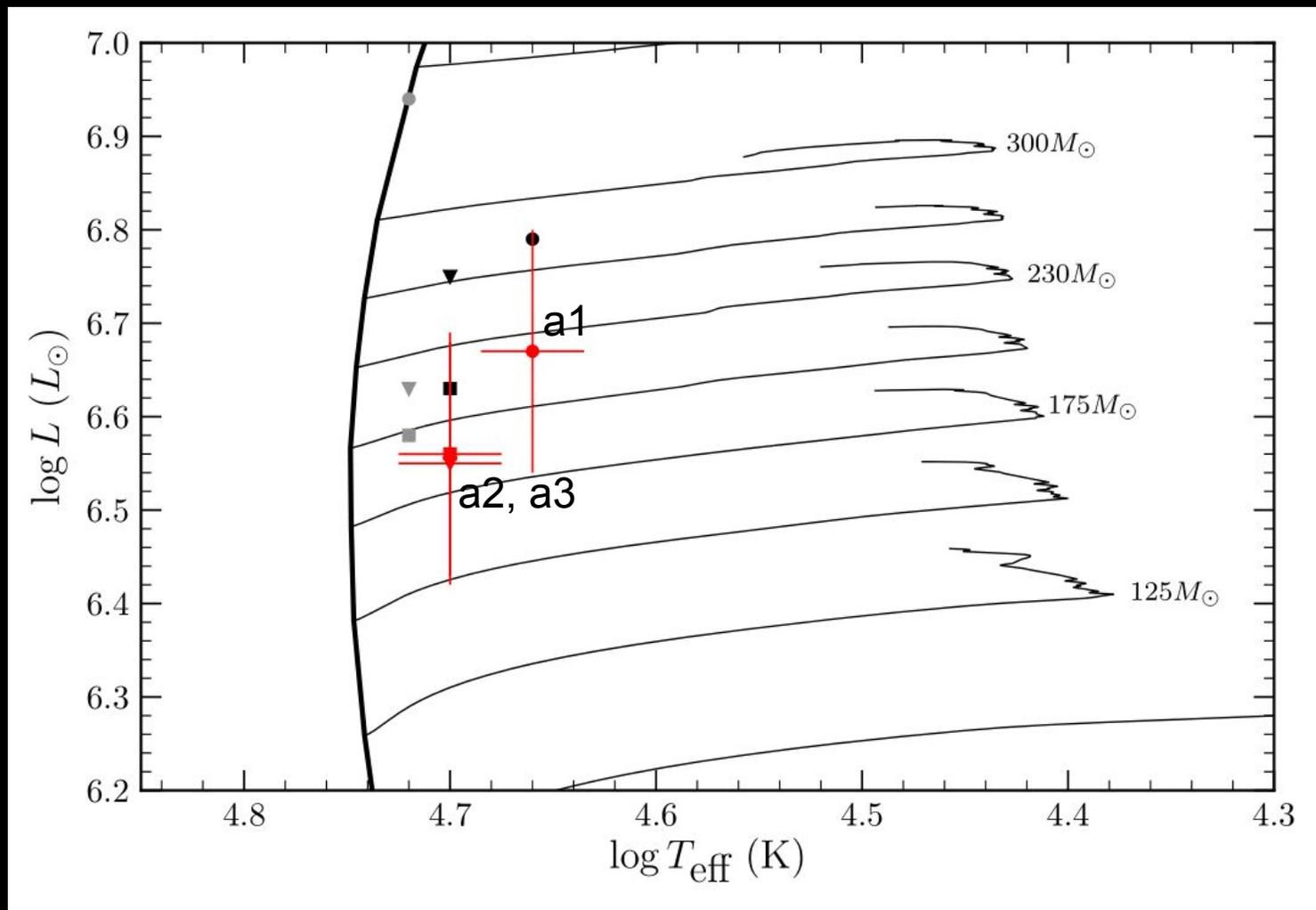




0.5''







a1 300-250 to  $200M_{\odot}$

a2, a3  $\sim 150M_{\odot}$

The most massive star known is *not that massive...*

## Why is this important?

- Initial mass function
- Pair-instability supernovae ( $>150M_{\odot}$ )
- Feedback

# Acknowledgements

Reach me at ~~venu.kalari@noirlab.edu~~

*At GSM-*

Want to use ZORRO talk to Ricardo- ricardo.salinas@noirlab.edu

Spe

Resolving the core of R136 in the optical

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# Review

Zorro@Gemini South to capture R136  
Resolved central core  $<40\text{mas}$   
R136a1 and a3 have close companions  
Estimated mass for a1,a2,a3  $\sim 200-150M_{\odot}$

# Speckle Imaging: Technical Details

