

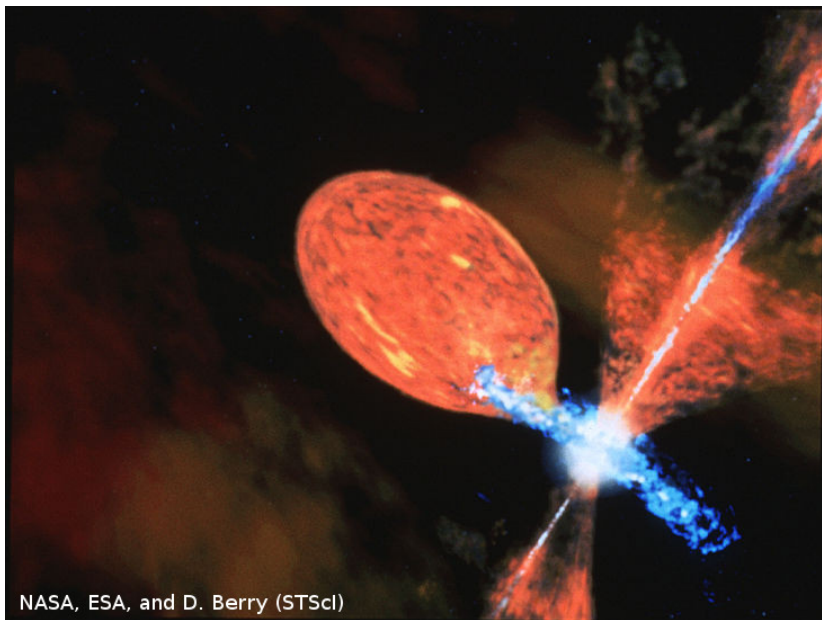
Symbiotic stars in the Magellanic Clouds

Krystian Iłkiewicz

collaborators: J. Mikołajewska, M. Shara and others

15 November 2018

Symbiotic stars



NASA, ESA, and D. Berry (STScI)

Symbiotic stars in Magellanic Clouds

- Known distance

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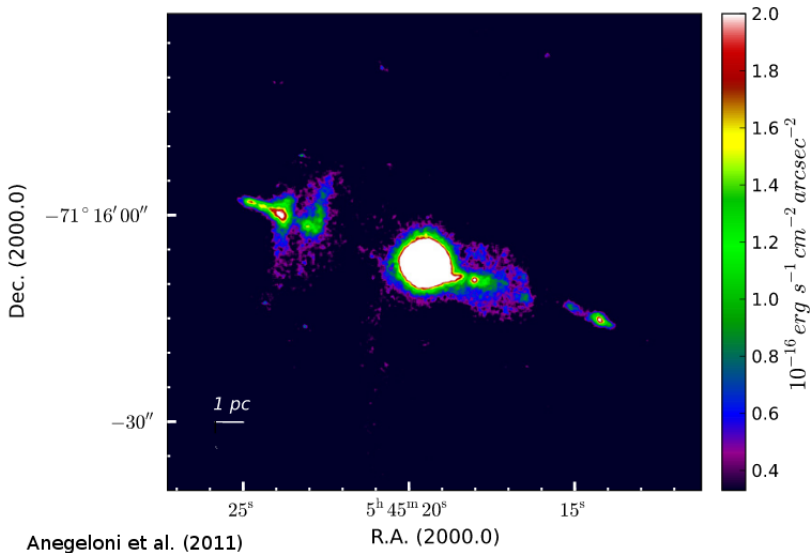
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Symbiotic stars in Magellanic Clouds

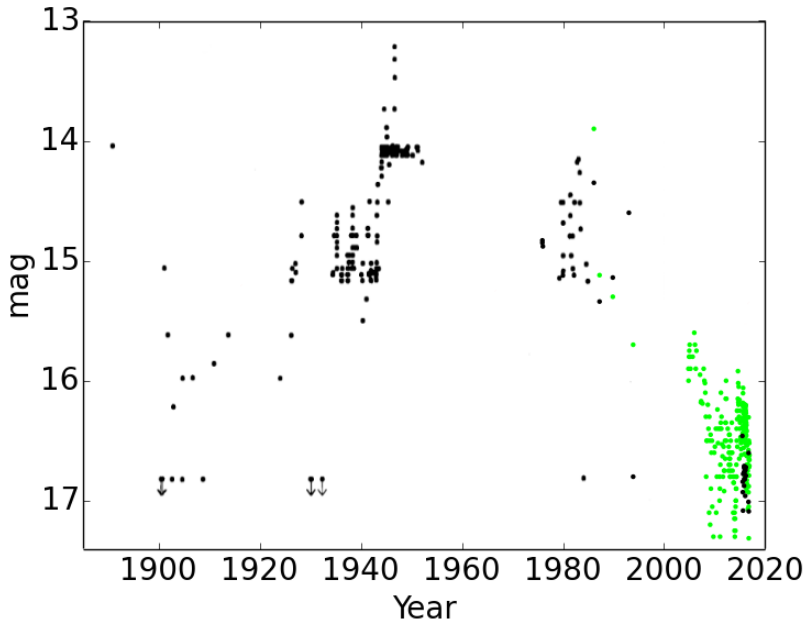
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Symbiotic stars in Magellanic Clouds - the story so far

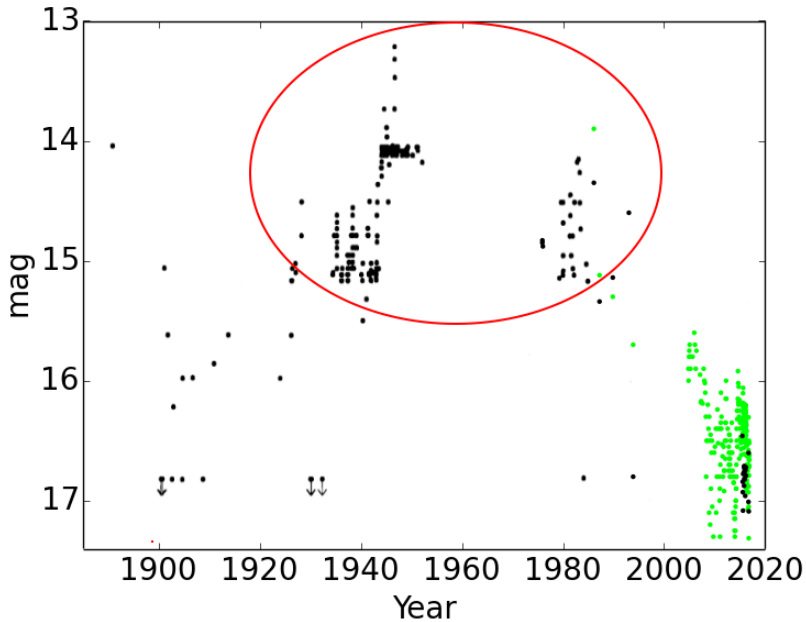
Sanduleak's star



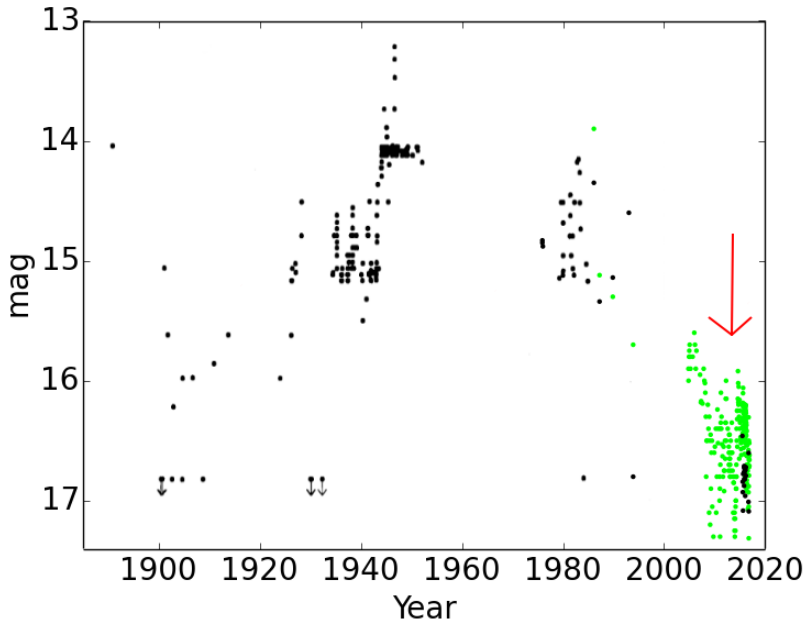
LMC S154 - recurrent symbiotic nova



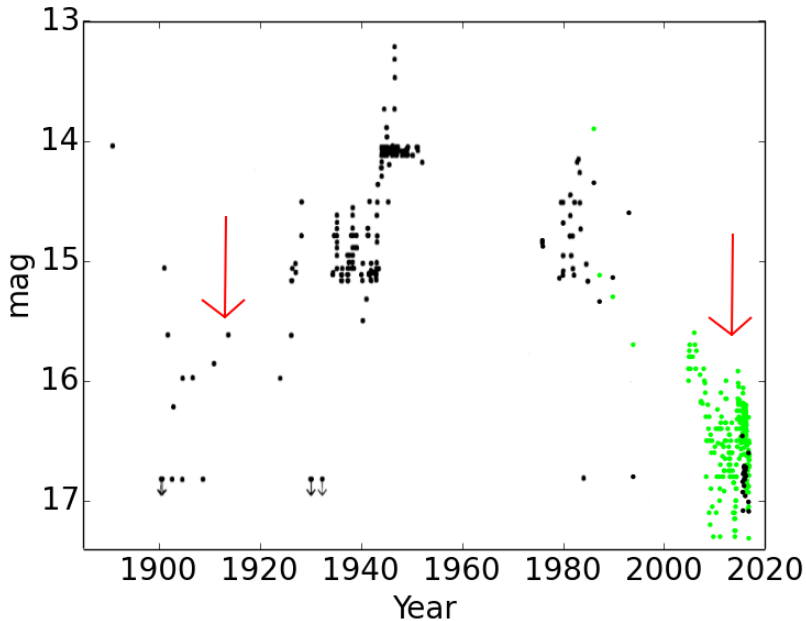
LMC S154 - recurrent symbiotic nova



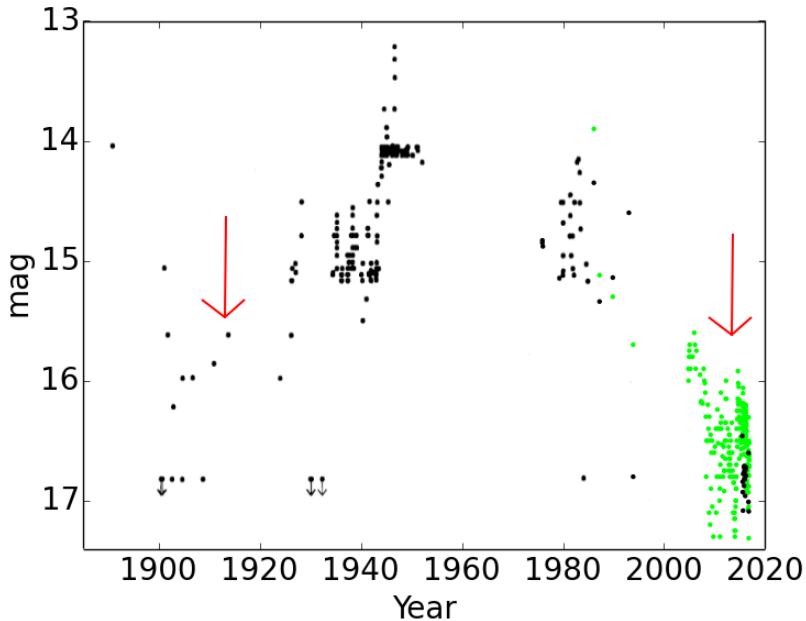
LMC S154 - recurrent symbiotic nova



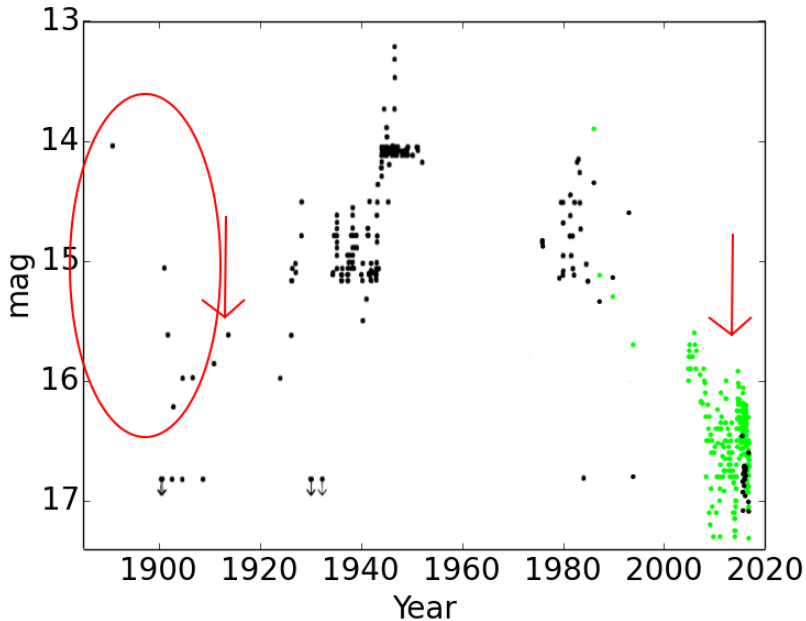
LMC S154 - recurrent symbiotic nova



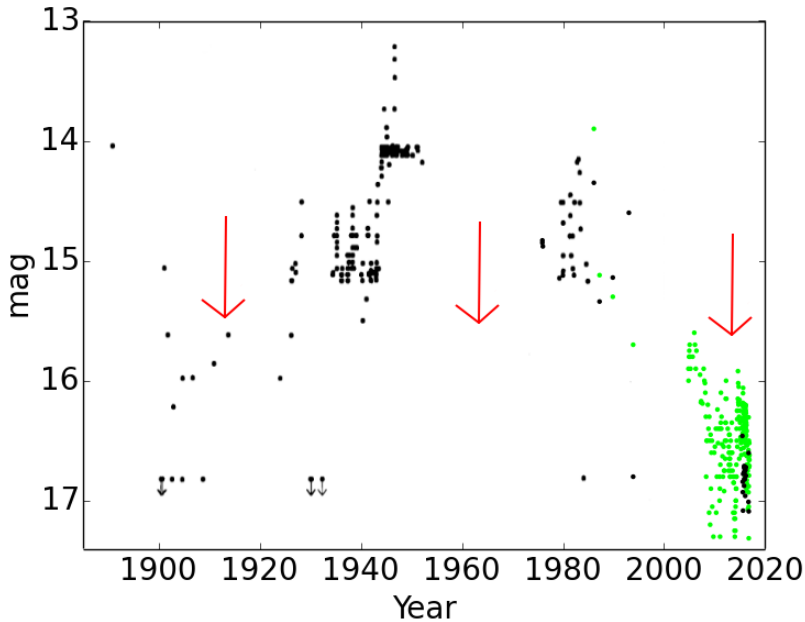
LMC S154 - recurrent symbiotic nova



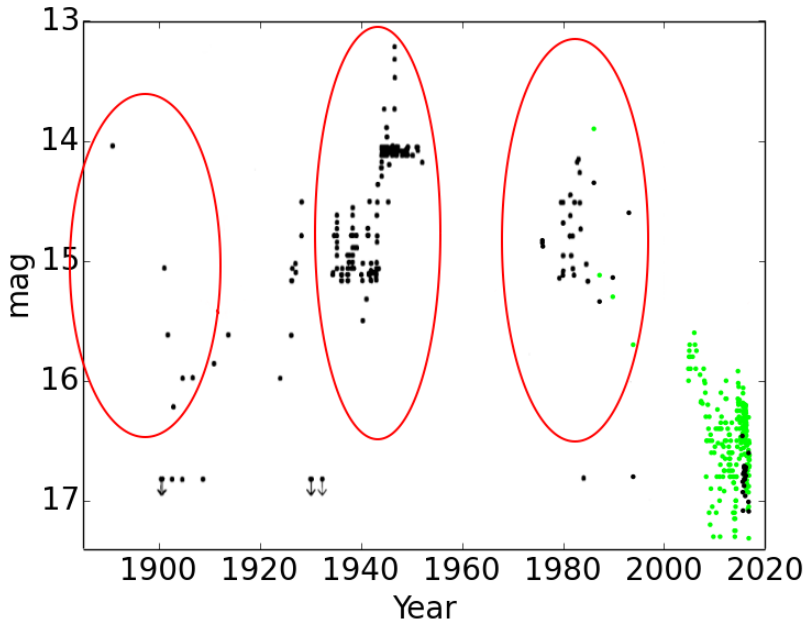
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LMC S154 - recurrent symbiotic nova



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- The first nova with a carbon-rich donor

LMC S154 - a highly controversial discovery

03/09/2018	searching for a referee
04/09/2018	sent to referee 1
09/10/2018	Reminder to Referee
26/10/2018	Reminder to Referee
02/11/2018	Reminder to Referee

TWO SMC SYMBIOTIC STARS UNDERGOING STEADY HYDROGEN BURNING

M. ORIO

INAF, Osservatorio Astronomico di Padova, I-35122 Padua, Italy; and Department of Astronomy,
University of Wisconsin, Madison WI 53706; orio@astro.wisc.edu

A. ZEAS

Harvard-Smithsonian Center for Astrophysics, Cambridge, MA 02138

U. MUNARI

INAF-Osservatorio Astronomico di Padova, I-35122 Padua, Italy

A. SIVIERO

Dipartimento di Astronomia, Università di Padova, I-35122 Padua, Italy

AND

E. TEPEDELENLIOGLU

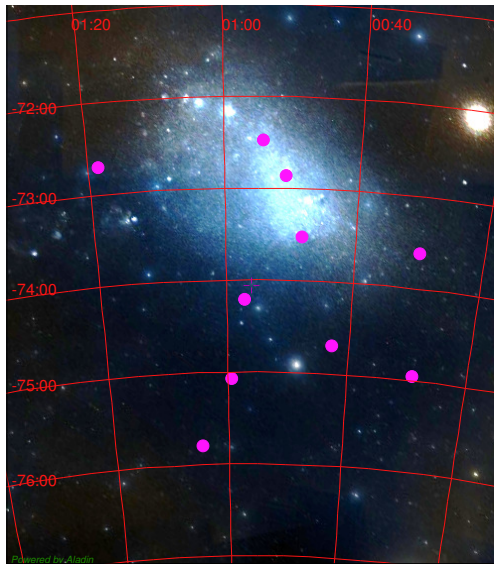
Department of Physics, University of Wisconsin, Madison WI 53706

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They seem interesting, but there are so few of them known!

Only 10+10 known in each Magellanic Cloud

SMC map of symbiotic stars



Maybe they are hiding among planetary nebulae?

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**Astronomy
&
Astrophysics**

Distinguishing between symbiotic stars and planetary nebulae

K. Ilkiewicz and J. Mikołajewska

Nicolaus Copernicus Astronomical Center, Polish Academy of Sciences, ul. Bartycka 18, 00-716 Warsaw, Poland
e-mail: ilkiewicz@camk.edu.pl

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Six new candidates in LMC - still not enough

A story of the future:

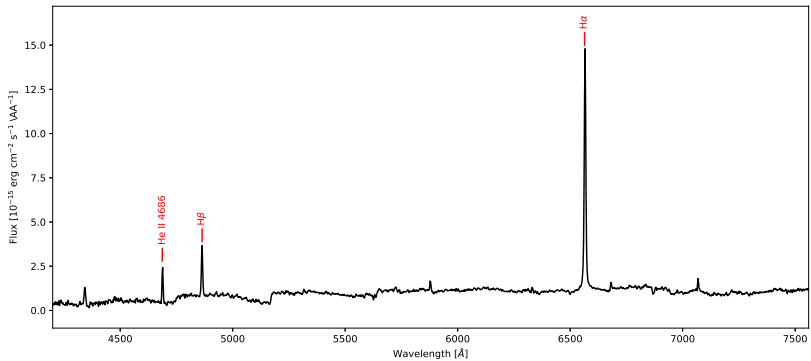
A story of the future:

A deep survey for symbiotic stars in the Magellanic Clouds

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A deep survey for symbiotic stars in the Magellanic Clouds

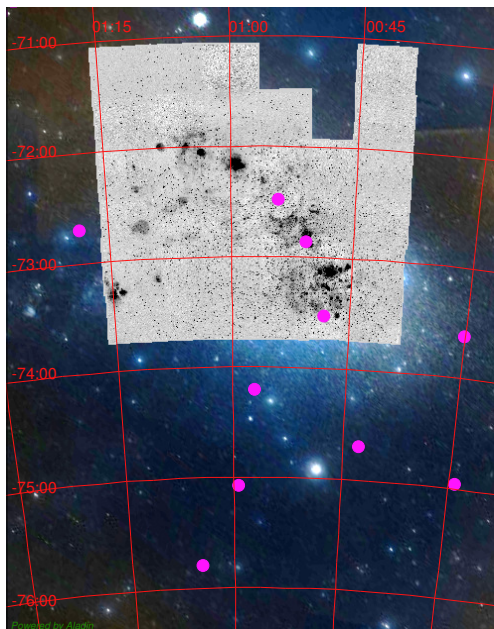
Problem: all the surveys so far have a success rate of 10% or lower



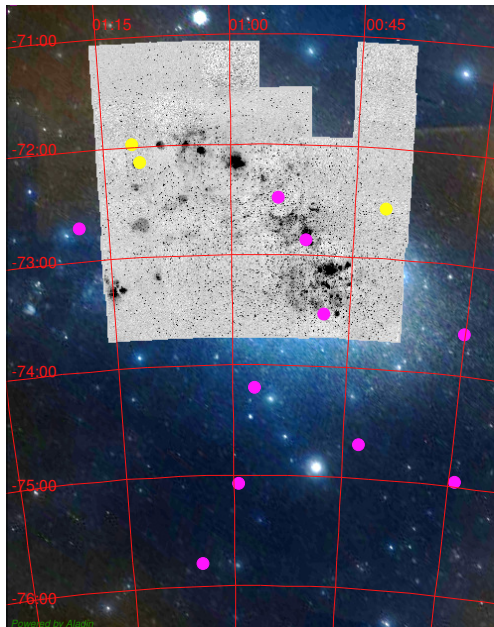
Solution:

Narrow-band photometric survey in $H\alpha$ and He II 4686

H α image of our feasibility study



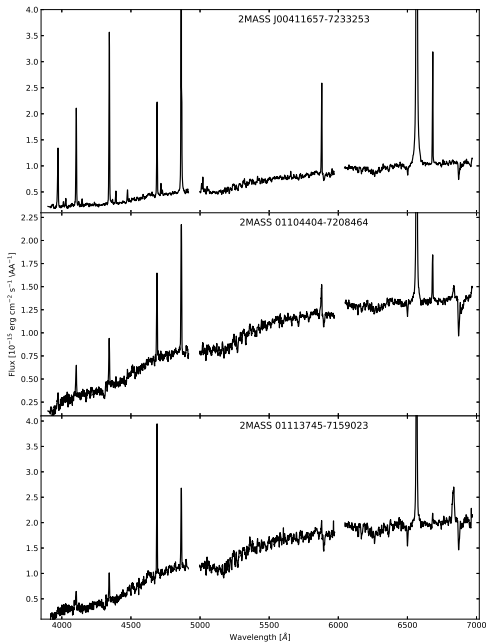
Three new symbiotic stars in SMC



Three new symbiotic stars

- Confirmed with SALT spectra

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- One shows enigmatic light curve similar to GX 1+4 (a symbiotic X-ray binary), also has one of the hottest WDs among all symbiotic stars ($T_{\text{WD}}=230\text{ kK}$)
- One has variability that we don't really understand

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Conclusions

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- A new deep survey for symbiotic stars in the Magellanic Clouds in $H\alpha$ and He II 4686

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- 30% success rate, while other surveys have 10% success rate or lower

Conclusions

- Symbiotic stars in MCs are interesting
- A new deep survey for symbiotic stars in the Magellanic Clouds in $H\alpha$ and He II 4686
- Three new discoveries in SMC only from the feasibility study, while 10 were known thus far
- 30% success rate, while other surveys have 10% success rate or lower
- Many new symbiotic stars in MCs expected!