RGES SIT Closeout: Community Outreach (Group 2)

Jennifer Yee

Deliverables:

- Online microlensing resource: microlensing-source.org
- Sagan Summer Workshop 2017
- AAS 233 Special Session
- Hack Session: Held at CCA Jan 2019
- Publicly available code for modeling microlensing events: MulensModel (and pyLIMA, VBBL)
- Data Challenge: First challenge held Jan 2018 -- Oct 2018

Microlensing Source

microlensing-source.org

Microlensing Source

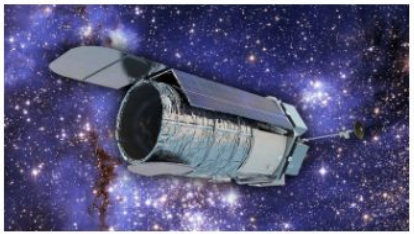
(Rachel Street & Jennifer Yee)

Overview | Learning | Glossary | Resources | Interactive | Opportunities | Software | Public Data | Data Challenge

Introduction to microlensing

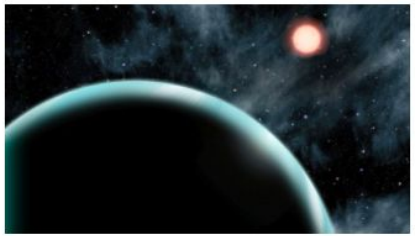
Learn how this fascinating phenomenon works

Overview of the field



The people and projects behind the discoveries

Resources



Images, movies, references and more

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microlensing-source.org

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Sagan Summer Workshop 2017

Sagan Summer Workshop 2017

SCIENTIFIC ORGANIZING COMMITTEE

Jennifer Yee, Chair (CfA)
Etienne Bachelet (LCO)
Jean Philippe Beaulieu (IAP)
Chas Beichman (Caltech/IPAC-NExScI)
David Bennett (GSFC)
Alan Boss (Carnegie DTM)
Sebastiano Calchi Novati (Caltech/IPAC)

SCIENTIFIC ORGANIZING COMMITTEE

Scott Gaudi (The Ohio State University)
Dawn Gelino (Caltech/IPAC-NExScI)
Calen Henderson (Caltech/IPAC-NExScI)
Roberta Paladini (Caltech/IPAC-NExScI)
Matthew Penny (The Ohio State University)
Kailash Sahu (STScI)
Rachel Street (LCO)

Sagan Summer Workshop 2017

Talks by SIT Members:

David Bennett, Valerio Bozza x2, Scott Gaudi x2, Calen Henderson x2, Matthew Penny, Kailash Sahu, Yossi Shvartzvald, Rachel Street, Jennifer Yee

Hands-On Session:

Organizers: Jennifer Yee, Etienne Bachelet, Rachel Street

Helpers: Yossi Shvartzvald, Calen Henderson

Testing by RGES SIT Group 2

Sagan Summer Workshop 2017

66 attendees

- 10 postdocs
- 26 grad students
- 1/3 working towards a masters
- 2/3 working towards a PhD
- 24 PhD level staff scientists/faculty
- 6 undergrad/high school students/other

2019: AAS 233 Special Session (Calen B. Henderson)

“Recent Exoplanetary Microlensing Discoveries as Pathfinding and Community Building for *WFIRST*”

Summary

- Speakers were mix of scientists within and external to microlensing community
- 50--100 attendees (simultaneous with NASA Decadal Preparations Session)
- Positive feedback, in particular for concluding talk by **Savannah Jacklin**

2019: CCA Hack Session (Jennifer Yee)

CCA Hack Session

- 51 people showed up for the first day:
  - 23 graduate students, 12 postdocs, 15 senior people
  - 5 non-microlensers
- Talks by SIT members:
  - David Bennett - Unsolved Problems in Multiple-lens Microlensing
  - Calen Henderson & Yossi Shvartzvald - NASA Exoplanet Archive, UKIRT, KMTNet, and Other Datasets
  - Etienne Bachelet - pyLIMA
  - Radek Poleski - MulensModel
  - Valerio Bozza - VBBL

CCA Hack Session

- 9 projects presented involving 36 distinct people:
  - WFIRST Event Finder (Phase B)
  - VVVlensing (Recovering long events with statistics)
  - Multiple lensing without polynomial
  - Testing Algorithms on MB07192 + Mixed MCMC
  - Hierarchical Models of single lens events
  - Ray shooting & Machine Learning + TensorFlow
  - Fitting OB140298
- 2 Breakouts:
  - “Features” in Machine Learning (led by Etienne Bachelet)
  - Mini-Inference Workshop (led by Rodrigo Luger)

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Additional Slides

Sagan Summer Workshop 2017

Talk Feedback:

Excellent level and variety of talks.

Talks progressed to more complex topics during the week.

Well organized.

Good introduction to the field; “liked how several talks were aimed at real beginners”

Sagan Summer Workshop 2017

Hands-On Session Feedback:

“The hands on session was amazing, well thought out, and moved at a great pace.”

“Hands on session was the best!”

“I thought it was done perfectly for microlensing.”

Microlensing Data Challenge 2018 (Rachel Street)

Goals:

- Accurately model events
- Distinguish variable stars
- Develop analysis process scalable to WFIRST datasets
- Encourage innovative approaches
- Bring new researchers into the field, ideally from diverse backgrounds, e.g. statistics

Dataset:

293 WFIRST lightcurves in two filters (Z087 and W149):
74 Single lenses (including FFP candidates)
83 Binary star lenses
43 Planetary binary lenses
93 Cataclysmic variables
0 Non-variables

Simulations by Matthew Penny

Entries and Results

- 4 teams entered, 16 people in total of whom 7 were newcomers
- Submitted tabulated model parameters plus text method descriptions and plots
- All entries anonymized and judged on four criteria
- Evaluated by 4-person community panel including expertise in microlensing, statistics and computing

Data Challenge 2018: Entries and Results

Category	Winning Team
Accuracy of fitted parameters	Bachelet et al.
Software/modeling process efficiency	Bachelet et al.
Innovation	Ranc et al.
Broadening the field	Bryden et al. (Vandylions)