SPARK Syllabus

Expectations:

1. Regular twice weekly meetings with advisory team to monitor progress, resolve challenges, and guide research trajectory
2. Every-other-week meetings with Cecilia and/or Josh
3. Every-other-week “research recap” SPARK cohort meeting to present results from the previous two weeks
4. Active attendance/participation in CfA seminars, group meetings, and networking opportunities – on topics relevant to your research, but always CfA colloquia
5. Create a research advisory panel (3 people including supervisor) and meet with them every other month
6. Attend SPARK training sessions once a month
7. Attend and present at an appropriate professional conference (**AAS**, **AGU**, **NeurIPS**, etc)
8. Present your research to the CfA
9. Document the results of your research in a professional report/manuscript
10. Attend and participate in the monthly CARA journal club; including presenting one paper during the journal club

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September 2026

- **Week 1:** Orientation and onboarding: introduction to CfA facilities and resources; meet advisor and discuss project scope. Meet everyday this week.
- **Week 2:** Begin literature review and define the goals of the research project; skills training with advisor (software, data analysis techniques, computational methods). Meet 3 times a week with advisor.
- **Week 3:** Class: introduction to astronomy software; work on **AAS abstract** with advisor → send draft to Cecilia and Josh.
- **Week 4:** Refine and finalize research questions and objectives; begin to develop a detailed project timeline and work plan.

October 2026

- **Week 1:** Submit **AAS abstract**; develop a detailed project timeline and work plan.
- **Week 2:** Initial meeting with research advisory panel.
- **Week 3:** Class: how to write a grad school application.
- **Week 4:** Should be deep into data collection, analysis, or simulations.

November 2026

- **Week 1:** Career panel (academic path); begin grad school application process (and associated grants).
- **Week 2:** Preparation of preliminary results.
- **Week 3:** SPARK training session “Intro to neural networks”.
- **Week 4:** Presentation: how to give a science talk.

December 2026

- **Week 1:** Prepare poster presentation for **AAS**.
- **Week 2:** Practice presenting poster; get feedback about poster/presentation; finish and submit grad school and grant applications.
- **Week 3:** Meet with research advisory panel; present initial findings, methodologies, and progress; get feedback from panel.
- **Week 4:** SPARK training session: how to have a successful science meeting (how to network, how to present, etc).

January 2027

- **Week 1:** Attend **AAS**.
- **Week 2:** SPARK cohort meeting – report on **AAS** meeting and experiences.
- **Week 3:** Continue detailed research work, deepen data analysis; adjust approach based on feedback from science advisory panel.
- **Week 4:** SPARK training session: Neural networks for astrophysics.

February 2027

- **Week 1:** Data analysis phase: troubleshooting, optimization, improvement.
- **Week 2:** SPARK training (observational astronomy).
- **Week 3:** Meet with RAP – discuss progress so far: Recommend discussing/deciding w/research advisory panel (**RAP**) about plans for research: paper?; how will their research be transferred; develop individual plan for what to do after, e.g. developing skills for industry.
- **Week 4:** SPARK training (how to write an academic paper).

March 2027

- **Week 1:** Ongoing data analysis; begin thinking about how to organize a paper/report.
- **Week 2:** SPARK cohort meeting – discussion about grad school and other options.
- **Week 3:** SPARK training (how to write a successful proposal).
- **Week 4:** Work on creating visualizations of results along with detailed summaries of findings.

April 2027

- **Week 1:** Begin drafting outline of paper/report; identify suitable journals/conferences for submission.
- **Week 2:** Meet with RAP – present outline, discuss next steps.

- **Week 3:** SPARK training (career panel – non-academic careers, visit the OCC in Burlington).
- **Week 4:** Share outline of paper/report with Cecilia and Josh.

May 2027

- **Week 1:** Begin preparing presentation for June CfA-wide showcase.
- **Week 2:** Complete outline of paper/report; begin working on draft of paper/report.
- **Week 3:** SPARK training (telescopes at the CfA – **Chandra**, **EHT**, **SphereX**, **GMT**, **SMA**, **TEMPO**).
- **Week 4:** SPARK cohort meeting – practice presentations with group.

June 2027

- **Week 1:** Begin to wrap up research, move focus to writing paper/report.
- **Week 2: CfA-wide research presentation**: present detailed findings and progress to the broader CfA community.
- **Week 3:** Meet with RAP – present results, discuss paper/report, discuss feedback from presentation.
- **Week 4:** SPARK training: visit the instrumentation labs at **CDP**.

July 2027

- **Week 1:** Continue working on paper/report revisions, incorporating feedback from advisor and advisory panel.
- **Week 2:** Continue writing.
- **Week 3:** SPARK training: how to handle a referee report.
- **Week 4:** Begin process of submission of paper/report.

August 2027

- **Week 1:** Create plan for transitioning project to next steps (continue, hand-off, etc).
- **Week 2:** Complete submission of paper/report for publication; final meeting with science advisory panel.
- **Week 3:** SPARK training: how to transition to a new appointment.
- **Week 4:** End-of-program reflection: evaluate skills developed, knowledge gained, next steps.