NSF's NOIRLab TAC

Date Received: 2024-12-17
Proposal Type: Standard
Panel:
Category: Strong Gravitational Lensing

Through a Magnifying Lens: Spectroscopic Follow-up of Strong Lensing Candidates from DELVE

Abstract of Scientific Justification (will be made publicly available for accepted proposals):

We propose to observe a sample of strong lensing (SL) candidates identified in DELVE imaging by Zaborowski et al. This sample includes 17 Grade A candidates, which are highly likely to be bonafide lensing systems. We aim to use SOAR telescope's Goodman Spectrograph to measure redshifts of the lens and source galaxies and determine the velocity dispersion of the lens galaxy. These observations will constrain key parameters of the Singular Isothermal Ellipsoid (SIE) lens model, providing critical insights into the mass distribution of the lens galaxies. The data will also serve as a benchmark to help validate the results of AI-based lens modeling methods, which will likely play a crucial role in analyzing the vast number of lensing systems expected from LSST.

Summary of observing runs requested for this project:

Run	Semester	Telescope	Instrument	Obs. Mode	No. Nights	Moon	Optimal Mo.	Accept. Mo.
1	2025A	SOAR	Goodman	Classical	1	Dark	Any	Any

Scheduling constraints and non-usable dates:
None

Instruments:

Instrument	Camera	Grating
Goodman Spectroscopy (long slit)	Red Camera	400 l/mm

Time Requested: 8 Hours

Minimum Time Accepted : 6.5 hours

Authors:

Name	Affiliation	Email
Gautham Narayan	U of Illinois Urbana-Champaign	gsn@illinois.edu
Vitor Souza Ramos	U of Illinois Urbana-Champaign	vitors2@illinois.edu

This work will indirectly benefit the thesis of Vitor Souza Ramos.

List of Targets:

This list is also available in CSV format and can be directly imported to NOIRLab's Time Allocation System.

ID	Object Name	RA	DEC	g-band magnitude	Exposure Time (s)	Seeing
10689000031396	DELJ075955-070736	120.0	-7.13	19.78	525.0	<1
10715000094501	DELJ084032-093115	130.1	-9.52	18.74	201.7	<1
10945600013954	DELJ090309-324821	135.8	-32.81	19.90	583.4	<1
10612900048103	DELJ091441-000721	138.7	-0.12	18.81	215.5	<1
10958900036875	DELJ095806-332445	149.5	-33.41	19.36	356.2	<1
10690100201637	DELJ100545-070335	151.4	-7.06	18.14	116.9	<1
10998100205590	DELJ112923-380852	172.3	-38.15	18.36	142.8	<1
10832100081054	DELJ120944-203607	182.4	-20.60	18.72	199.2	<1
10793900013522	DELJ123824-155929	189.6	-15.99	19.37	361.0	<1
10730700102688	DELJ140320-095209	210.8	-9.87	19.80	536.0	<1
10628400094667	DELJ141337-020147	213.4	-2.03	19.45	388.1	<1
10782000107950	DELJ141748-153603	214.5	-15.60	18.75	203.5	<1
10987600045877	DELJ154548-374851	236.5	-37.81	18.67	189.4	<1

10703400012265	DESI-164.3198-08.2676	164.3	-8.27	19.63	457.2	<1
10679700112940	DESI-216.8280-06.7541	216.8	-6.75	18.88	231.0	<1
10923500121579	J1537-3010	234.4	-30.17	19.85	560.3	<1
10742100169022	RXJ1131-1231	173.0	-12.53	19.48	399.1	<1