What is an abstract?

- Short paragraph that grabs the attention of the reader about why it is important and unique
- If someone only reads the abstract they should know your top line result.
- Journal papers
- Conference submission (already accepted and then applications) - to present a talk or a poster - -this is the *only* thing they are going to read
- Advertisement --- Colloquium emails , Talk series
- Proposals !!!!!!

What is an abstract?

- Summary of findings (journal)
- Advertisement (a talk)
- Stand-alone application for a competitive spot (for a conference)
- Preview of an argument (proposal)

What is the goal of an abstract?

GOAL:

- Summary of findings (journal)
- Advertisement (a talk)
- Stand-alone application for a competitive spot (for a conference)
- Preview of an argument (proposal)

What is the goal of an abstract?

GOAL: To summarize an argument for a particular point of view

- Summary of findings (journal)
- Advertisement (a talk)
- Stand-alone application for a competitive spot (for a conference)
- Preview of an argument (proposal)

Why does an Abstract even matter?

- Summary of findings (journal) → your peers , scientific community : REFEREE (you're arguing that your science is correct and should be published).
- Advertisement (a talk) → Peers, General public – competing for people's time --> argument is that people should listen to you.
- Stand-alone application for a competitive spot (for a conference) → allocation committee .. All they have to go in is the abstract. → argument is that you should be given a spot to speak.
- Preview of an argument (proposal) → arguing for why you should get resources allocated

Searching Abstracts

- HST Program Info: https://www.stsci.edu/hst/observing/program-information
- HST MAST: https://archive.stsci.edu/hst/abstract.html
- JWST Cycle 1 : https://www.stsci.edu/jwst/science-execution/approved-programs/cycle-1-go

Grading Criteria Given to HST/JWST TAC

Grade	Impact within the sub-field	Out-of-field impact	Suitability
1	Potential for transformative results.	Transformative implications for one or more other sub-fields.	Science goals can only be achieved by observational or theoretical analysis of HST data.
2	Potential for major advancement.	Major implications for one or more other sub-fields.	Analysis of HST data offers major advantages over data from other facilities.
3	Potential for moderate advancement.	Some implications for one or more other sub-fields.	Analysis of HST data offers some advantages over data from other facilities.
4	Potential for minor advancement.	Minor impacts on other sub-fields.	Analysis of HST data offers minor advantages over data from other facilities.
5	Limited potential for advancing the field.	Little or no impact for other sub-fields.	Analysis of HST data offers little or no advantage over other facilities or the advantages of analysing HST data are unclear.

Abstract Outline

Facts

Importance of Facts — Impact within Sub Field

Problem — sets the story /narrative: title relates to this

Goal – identify the "key component" that will solve the problem using a specific "target" — We propose to…

Strategy – to utilize/generate the "key component" , (Justify HST/JWST/resource, explain utilizing the "target") — Suitability

Importance of Solution — Impact within Sub Field

Broader Impact — Out-of-field Impact

James Webb Space Telescope Cycle 1 GO Proposal **2260**

Caught in the act of dispersing their disks? MIRI MRS can tell

Transition disks are planet-forming disks with large dust gaps or cavities, from a few to tens of au. Based on spectrally resolved 12.8 micron [NeII] profiles, several of them have been also found to drive slow (~5 km/s) winds, compatible with star-driven photoevaporative flows. Regardless of whether the gaps/cavities are created by planets or photoevaporation, these systems might be in the unique stage of dispersing their disks. However, line profiles alone cannot exclude MHD winds which might drive evolution but not dispersal. Here, we propose MIRI MRS observations of two transition disks with a large dust cavity (>30 au in radius) and a small (=<4 au) inner disk plus evidence for a slow [NeII] wind. MIRI MRS is the only instrument that can spatially resolve [NeII] emission near or exterior to the cavity radius as expected in the photoevaporative wind scenario. Along with [NeII], we will map the emission from other forbidden and H recombination lines to constrain the ionization fraction of the flowing gas, hence wind mass loss rates. Our project will establish how much time is left for planet formation and migration in these two systems and provide a pathfinder for future observations aiming at clarifying how disks disperse.

Facts

Importance of Facts

Problem - title

Goal – key? Target?

Strategy

Importance of Solution

Broader Impact

Monster in the Early Universe: Unveiling the Nature of a Dust Reddened Quasar Hosting a Ten-Billion Solar Mass Black Hole at z=7.1

The discovery of z>7 quasars hosting billion solar mass supermassive black holes (SMBHs) places the strongest constraints on the formation of the earliest SMBHs in the universe. These quasars are also signposts of the assembly of the early massive galaxies during the epoch of reionization. Is there an upper limit on BH masses and the rate of their growth in the early universe? Recently, a luminous quasar at z=7.1 has been discovered to host a SMBH with at least 10 billion solar masses. It also shows evidence of strong dust reddening based on ground-based spectroscopy. Its rest-frame UV continuum shape is highly unusual, suggestive of extinction due to supernova produced dust. However, the total extinction is completely unconstrained with ground-based data, therefore the SMBH mass is only a lower limit. We propose to carry out JWST observations to obtain its rest-frame optical spectrum and broad-band SED in the near-infrared. The first goal is to accurately measure its BH mass based on its H-beta line and bolometric luminosity fully corrected for extinction, in order to confirm the first detection of a BH with mass exceeding 10 billion solar masses in the early universe. The same data will be used to characterize the nature of dust extinction and test whether supernova dust can explain its continuum shape. The modest JWST program proposed here will unveil the nature of this remarkable quasar at the epoch of reionization, and provide new insight in the growth of the most massive BHs in the early universe and their connections to galaxy formation.

Facts | Importance of Facts | Problem | Goal – key ? Target? | Strategy

Facts/Target | Importance of Solution | Broader Impact

A New View of Dust at Low Metallicity: The First Maps of SMC Extinction Curves

Sandstrom HST GO 13659 (colloquium speaker in May)

In order to constrain basic dust physics and anchor the interpretation of both UV/optical extinction and IR emission at low and high redshifts, we propose seven-filter photometry of a key region in the Small Magellanic Cloud (SMC). Via a cutting-edge technique demonstrated to work in M31 we will use these data to construct the first ever maps of the extinction curve shape (Rv), 2175 Angstrom bump strength, and dust column (Av) across a low metallicity environment. These maps will allow us to (1) measure the true distribution of extinction curves in the SMC, which is frequently used as a template for low metallicity extinction; (2) rigorously test whether PAHs are the carriers of the 2175 Angstrom extinction feature; and (3) place the estimation of dust masses from IR emission in low metallicity systems on a firm empirical and observational footing. Dust regulates the structure and evolution of interstellar medium (ISM) and shapes the optical and ultraviolet emission of galaxies. Its emission at infrared and mm wavelengths represents a powerful tool to probe the ISM out to the highest redshifts. Understanding the physics and interpretation of dust absorption and emission as a function of metallicity is critical to a vast range of science and mapping key dust properties is a new application, uniquely possible with UV through NIR imaging from HST. As such, we expect this program to have wide ranging scientific impact.

Problem

Goal – key component and target

Proposed strategy/Solution

Importance of Solution

Why HST & Broader Impact

Facts

Importance of Facts

A New View of Dust at Low Metallicity: The First Maps of SMC Extinction Curves

Sandstrom HST GO 13659

Qualifiers:

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