PURE Presentation Workshop

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What Should You Present?

- Tell us what the problem is and why it is important
- Tell us what your role in solving the problem is
- Tell us about your progress
- Tell us what skills and knowledge you have picked up during your time in PURE
- Don’t forget to thank and acknowledge your mentors/group!
- Include referenced material
Be Clear and Concise!

- Nobody will read a long paragraph
- Stick to short phrases and bullet points
- You are presenting to a general audience so don’t use jargon
- Organization of poster should make sense (left to right, top to bottom)
- Choose a background that is not distracting. Solid colors are best
- Check for typos, spelling, and grammatical errors
- Print part of poster to make sure things are sized sufficiently
- Have mentors check posters!
Legible Fonts

• Sans serif fonts are easier to read from far away (Calibri, Arial, etc)
• Serif fonts are not (Times New Roman or any “typewriter” fonts)
• Use the same font/size throughout your poster
• Avoid too much color (black on white or vice versa is easiest to see)
• Color can be used to emphasize points (but again use sparingly)

- PPT users should use Microsoft Equation (insert → object) to insert equations
- Latex is good for equations if you have it (check with mentor)

\[ p(x) = p_0 \left( C_1 + \frac{C_2 x}{L} \right) \quad \text{vs} \quad p(x) = p_0 \left( C_1 + \frac{C_2 x}{L} \right) \]
Clear Figures/Plots

• Make sure everything is easy to see
• Avoid colors that are hard to see (yellow, pink, gray)
• Axes on plots should be large enough to read
• If figure/plot is not your own you must cite it!
• Make sure you lock aspect ratio when resizing
• Try to place most important figures at eye level to attract attention
• Avoid excel!

Probing Quasar Accretion Disks

Quasars are the highly luminous, immensely powerful centres of galaxies containing supermassive black holes. These galaxies are powered by accretion of material onto the black hole – an extreme physical process which is barely understood.

We cannot see the central black hole, but we can observe the disk of swirling gas it feeds on. The matter forms an accretion disk in order to lose its angular momentum before being captured by the black hole's gravity. As the material circles inwards it heats up – the inner disk glows brightly in X-rays whilst the outer disk can be seen in optical light.

Analyzing the broad-band X-ray spectrum provides clues to the emission mechanisms of the inner accretion disk. Here are 3 spectra overlaid of the quasar HESS 311, taken several years apart. The low energy emission was different at the time of the red spectrum. This variability therefore can give us an estimate of the black hole mass.

The optical spectrum tells us about the cooler gas in the outer disk. The spectrum is thought to be thermal emission with a blackbody-type shape. The following plots show predictions for the optical luminosity with a galaxy size varying disk mass (largest at top).

The two panels above show the same spectrum with 2 possible emission models.

If we are to understand black holes we must peer into the physics of accretion disks. The power created by accretion is phenomenal, yet we do not understand the mechanism by which angular momentum is transferred outward allowing matter to approach the hole.

Detailed multi-wavelength observations, made possible with large ground-based telescopes and modern orbiting X-ray observatories, has provided the most detailed spectra ever seen. Together with theoretical modelling we should vastly improve our understanding of accretion power in Quasars in the coming decade.

A closer look will also reveal special features which allow the chemical composition of the accretion disk to be determined. Here is a section of the complex spectrum of the quasar IRAS13340+2430.

On the right is an optical spectrum of the object IRAS 249. This is strong spectral features and measuring these gives information on the speed of the gas and its chemical composition. The optical emission may, in fact, come from unperturbed X-ray photons, but the evidence so far is inconclusive.
Poster Templates

• Two templates on PURE website. One for CS and one for ECE

• Make your own! Maximum 24 x 36 inches
  • Design → Page Setup
  • Slides sized for: custom
    • Width = 24
    • Length = 36

• ECE students should include Rockwell Collins logo somewhere

• Everyone should include P.U.R.E somewhere
The Poster Session

• Tentatively set for 5-6PM on December 1 (Thursday) at the Siebel atrium

• Upload posters by November 29 to PURE website

• Dress business casual

• Encourage your mentors, friends, professors to come

• Practice talking through your poster from beginning to end

• Have fun!