

Daeun Kang

Research Interests: AGN driven ionized gas outflows

- Outflow kinematics of ionized gas

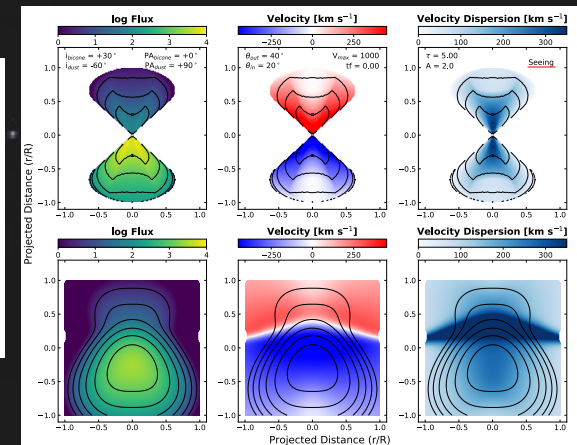
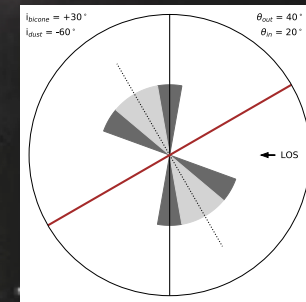
- [OIII], H α , H β emission lines spectral analysis
- Outflow kinematics & AGN energetics
- SDSS, Integral field spectroscopy (Gemini GMOS IFU)

- Outflow modeling

- 3D bicone-shaped model
- 2D projection + PSF convolution

- AGN Feedback

- Measuring outflow radii with emission line kinematics
- Outflow Size – Luminosity relation



Research Background

PhD topic – “Multi-band studies of blazars with XMM-Newton”

Temporal and spectral studies of blazars to understand the nature of the local environment of AGNs and the radiation processes occurring in the vicinity of central SMBH.

Key Research Interests

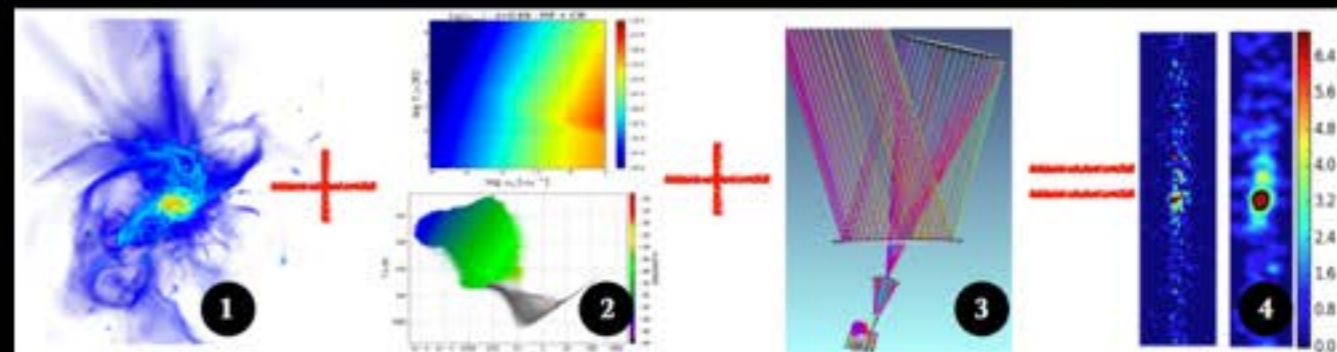
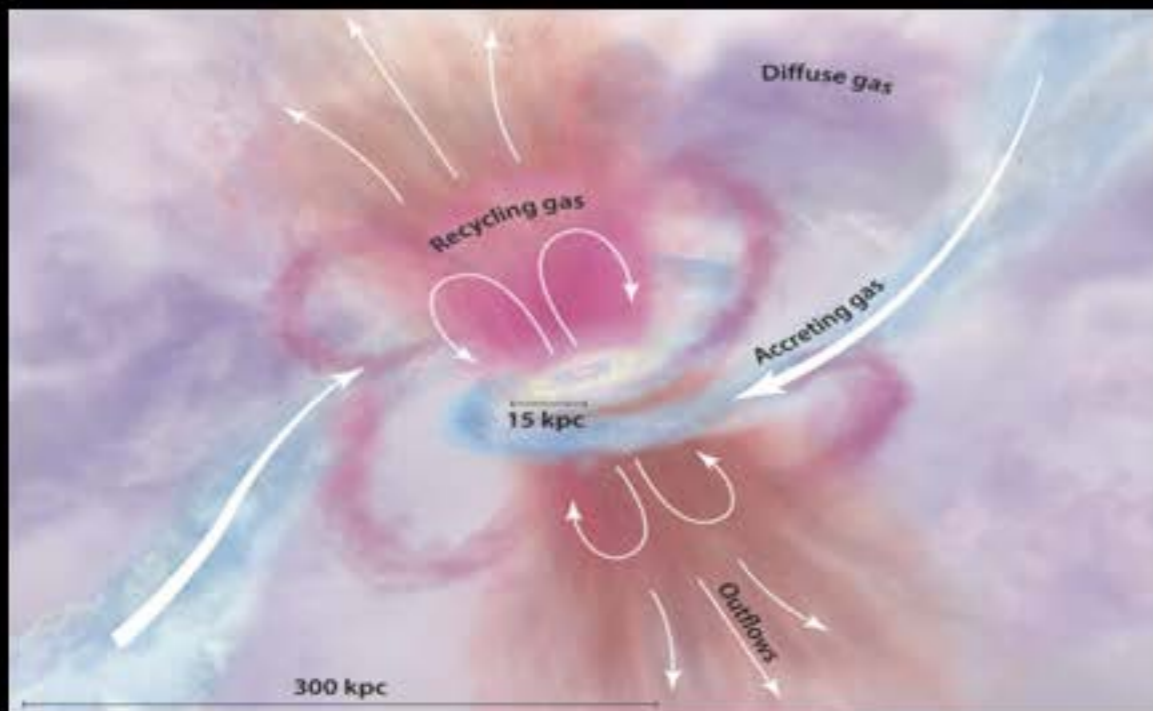
- ❖ X-ray astronomy, X-ray & optical observations and multi-wavelength study of AGNs
- ❖ Emission and absorption lines in X-ray spectra of AGN to understand BH physics.
- ❖ X-ray and optical Reverberation Mapping.
- ❖ Investigating the AGN accretion disc-jet-corona relation.
- ❖ SED modeling to understand jet structure and dynamics.

LAM

LABORATOIRE D'ASTROPHYSIQUE
DE MARSEILLE



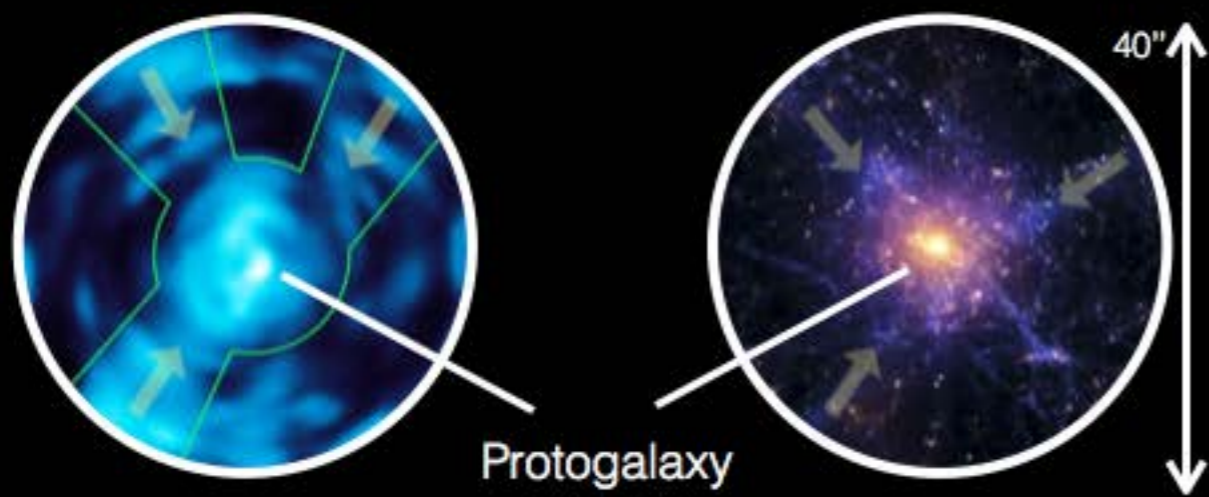
Vincent Picouet
Project scientist
PhD next year



The end to end analysis, composed of a zoom-cosmological simulation coupled to an emission model processed by the instrument's model predicts that the CGM should be detectable by FIREBall-2's instrument.

3 main mechanisms in the generation of Lyman alpha photons for CGM:

- **Photo-ionization**
 - From the cosmological UV Background (UVB)
 - From the ionizing photons escaping the ISM
 - From a nearby ionizing source (fluorescence)
- **Collisional ionization**
 - From gravitational collapse (cooling radiation)
 - From feedback
- **Scattering**
 - Of Lyman alpha photons escaping the ISM (stellar contribution)
 - Of Lyman alpha continuum photons (photon pumping)



Observation

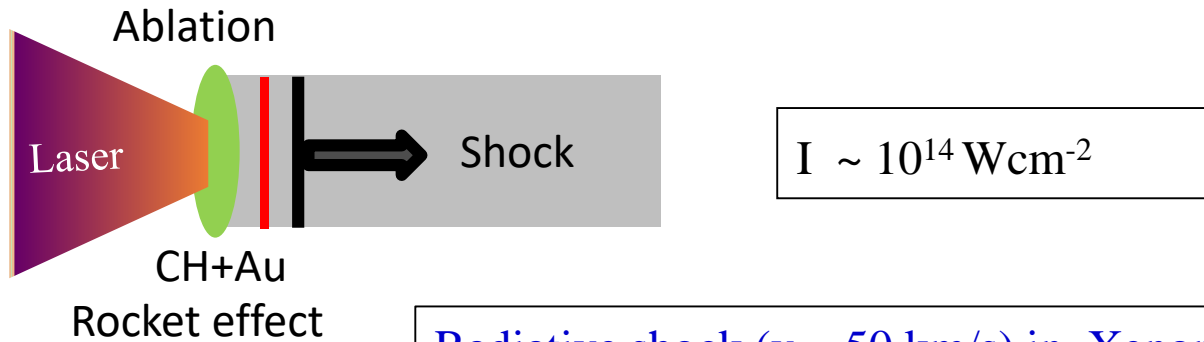
Protogalaxy
10 Gyr

Simulation

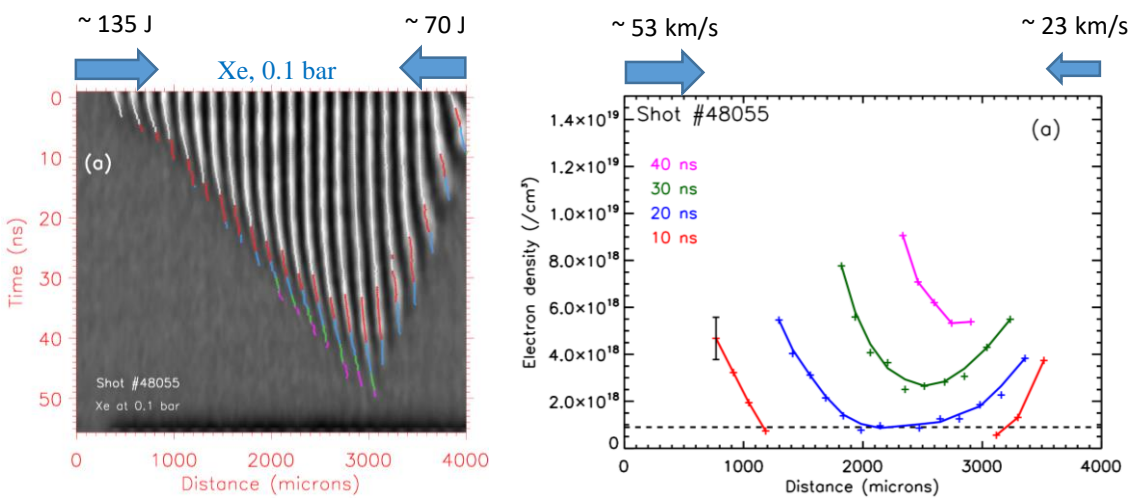
Caltech Press Release April 28 – Results from
Palomar Cosmic Web Imager

PhD: Strong *radiative shocks* relevant for stellar environments: experimental study and numerical approach.

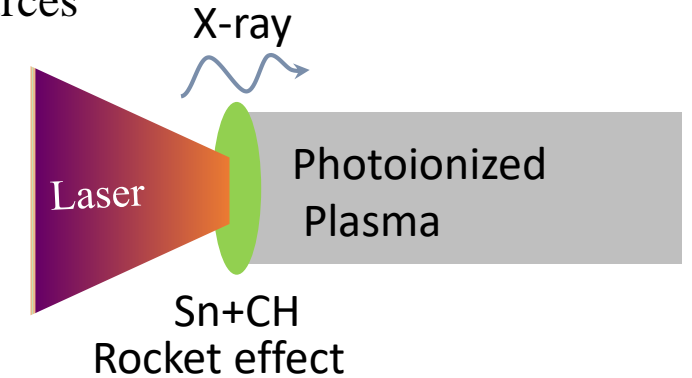
Strong shocks are present in various astrophysical contexts: stellar disk, plasma jets, stellar supernovae



Radiative shock ($v \sim 50 \text{ km/s}$) in Xenon



Present Work: Production of *photoionization-dominated laboratory plasmas* of relevance to accretion-powered astronomical X-ray sources



- Photoionized plasma by a strong X-ray source is the dominant process are of great interest in a number of research areas.
- In astrophysics we have accretion-powered X-ray sources, such as a neutron star or black hole.
- Detailed comparisons of the photoionized plasma experimental (performed at the VULCAN laser facility) result with **Cloudy** predictions.



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Research interests

- Variable stars
- Exoplanets