Galactic Center VR

Christopher M. P. Russell

Pontificia Universidad Católica de Chile

Director, Instituto de Astrofísica VR Lab

Catholic University of America

NASA Goddard Space Flight Center

Baltasar Luco PUC

Jorge Cuadra PUC & Univ. Adolfo Ibañez

Miguel Sepúlveda Univ. de Chile

AAS 236 Press Release: June 2, 11:15am
“Galactic Center To and Fro”

crussell@udel.edu
T: @chrastropher

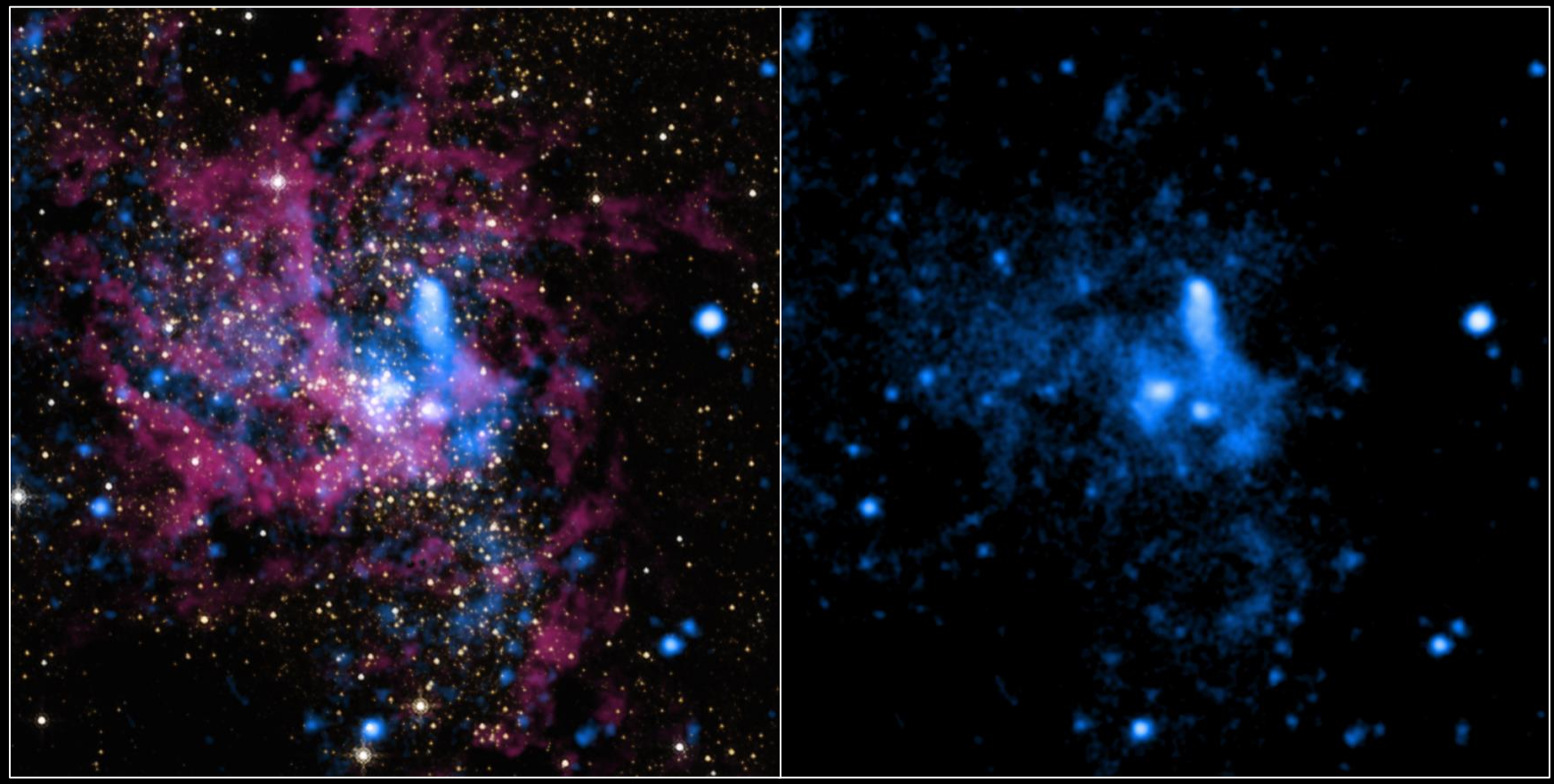
Chandra and the Galactic Center

Crowded regions require sharp vision → Chandra is well suited for Galactic Center

X-rays: blue

Infrared, stars: yellow

Infrared, gas: purple



X-rays only

Each panel is 1”x1”, or about 7.5ly on a side

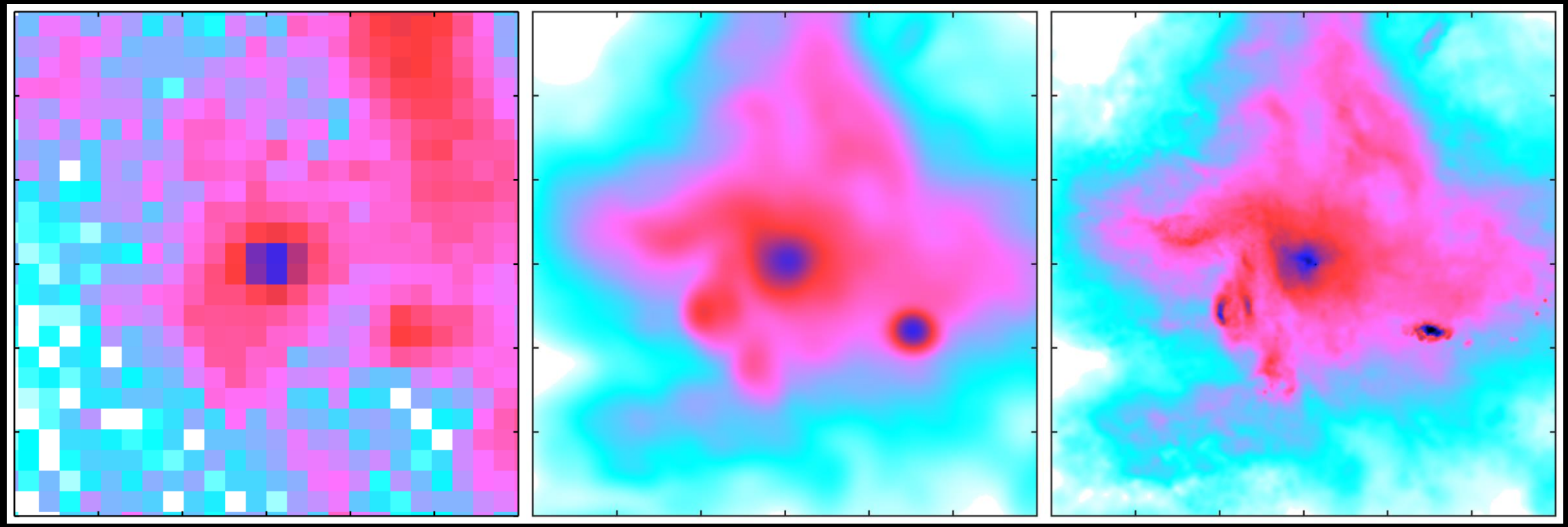
Sgr A* distinguished in X-rays from other sources

Credit: X-ray: NASA/Chandra/UMass/Q.D.Wang et al., IR: NASA/STScI

Chandra and the Galactic Center

Chandra provides observational constraints for models:
colliding stellar winds from stars orbiting Sgr A*

12”x12” or about 1.5ly across



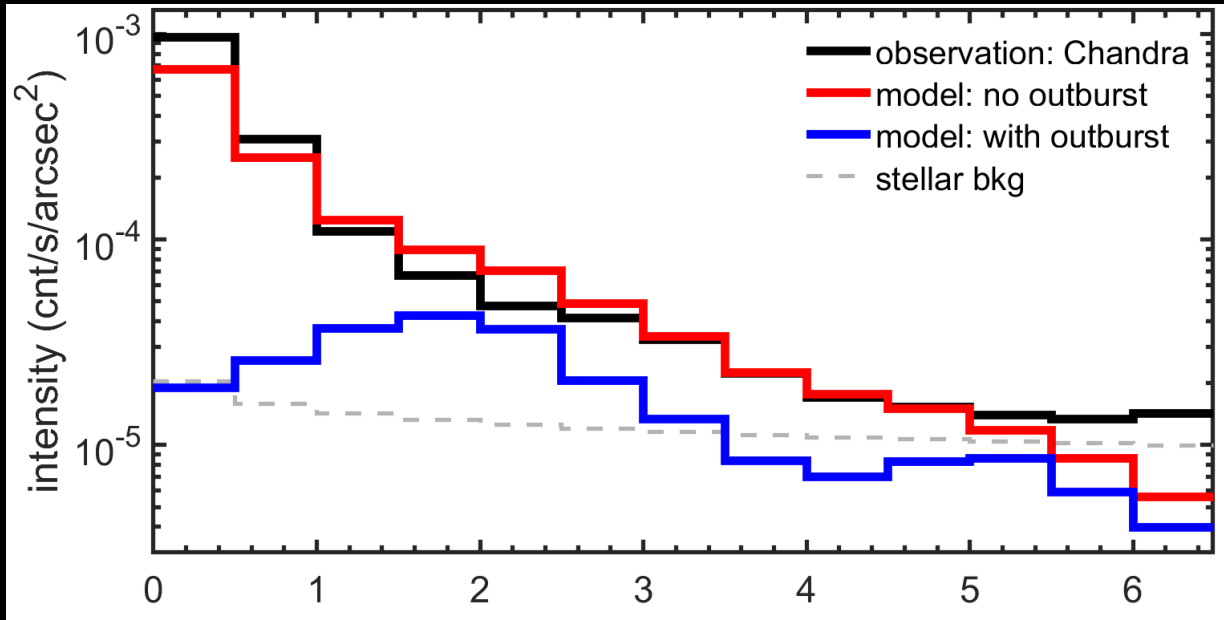
X-ray brightness: blue is brightest

Chandra observation | Model mimicking Chandra | Model at native resolution

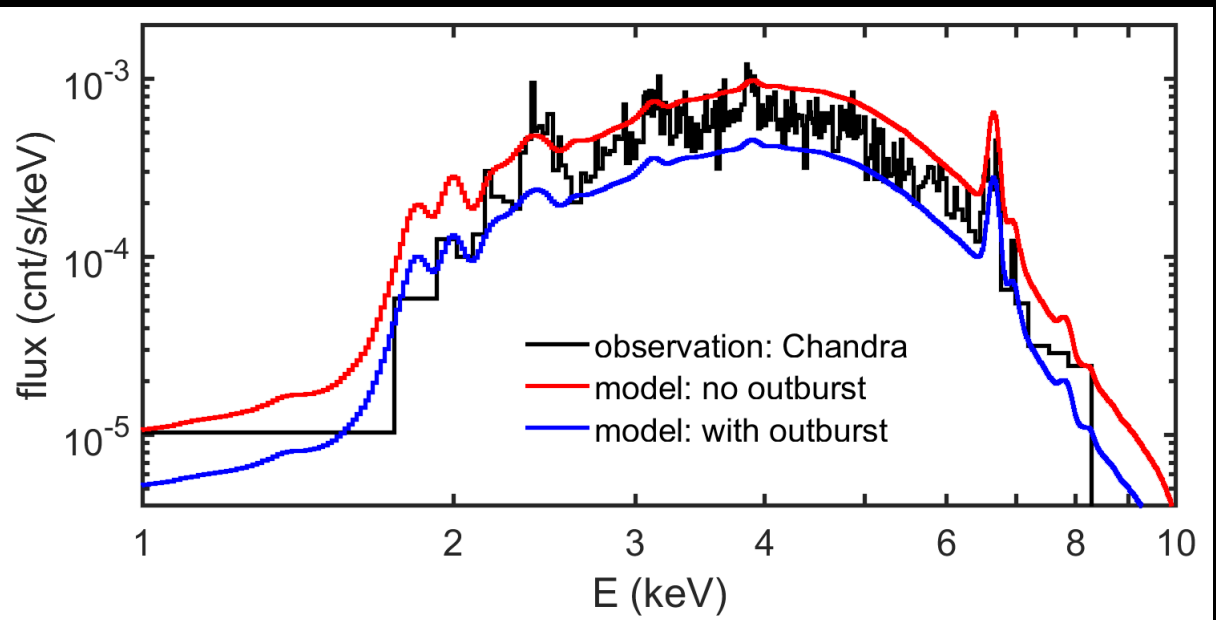
Russell et al. 2017, MNRAS, 464, 4958

Chandra and the Galactic Center

Chandra provides observational constraints for models:
colliding stellar winds from stars orbiting Sgr A*



X-ray brightness vs distance from Sgr A*



X-ray shape shows wind speeds are well constrained

Russell et al. 2017, MNRAS, 464, 4958

Galactic Center VR

Goal: share these models with the public in an engaging way

- Objective 1: Load simulation output into VR environment
- Objective 2: Move anywhere and look anywhere in the simulation!
- Objective 3: Distribute as widely as possible

Galactic Center VR

Goal: share these models with the public in an engaging way

- Objective 1: Load simulation output into VR environment
  - load positions, size, density, & X-rays directly from the simulation
  - red/yellow: winds themselves (via density)
  - blue/cyan: X-rays
  - purple: composite of red & blue
- Objective 2: Move anywhere and look anywhere in the simulation!
  - VR interface for exploring simulation
  - Move anywhere via walking or point a controller in any direction
  - Look anwhere by simply turning you head
- Objective 3: Distribute as widely as possible
  - published on Steam and Viveport VR stores

<Live VR Demo>

The live demo of the app – the most important part of this talk – is available on the AAS Press Office YouTube channel.

Please go here to see the presentation:

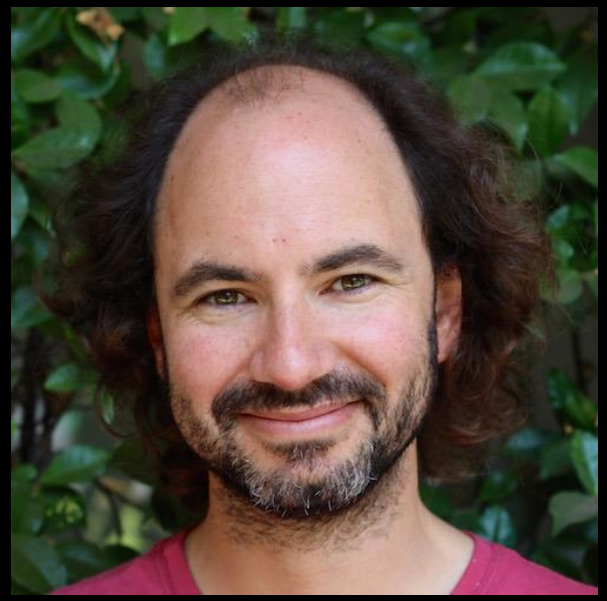
https://youtu.be/TmCdbHD1V1g?t=204

https://youtu.be/TmCdbHD1V1g?t=204

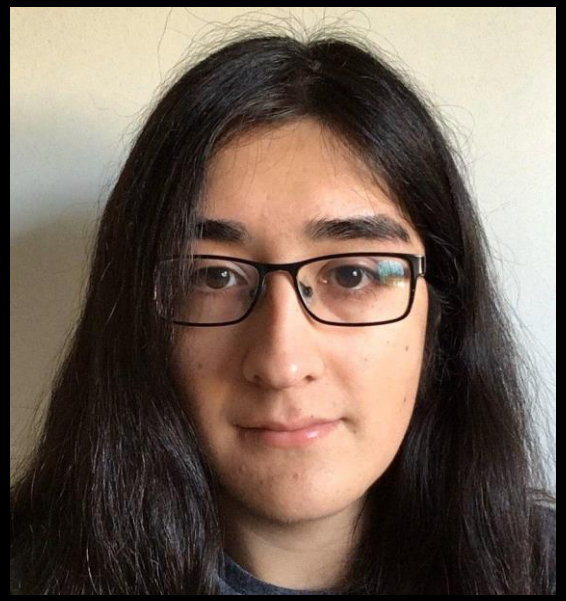
My talk starts at 3:24
Live demo starts at 5:00

Acknowledgements

Baltasar Luco



Jorge Cuadra



Miguel Sepúlveda

UNIVERSIDAD CATÓLICA DE CHILE PONTIFICIA

Centro de Astrofísica y Tecnologías Afines

CONICYT
Ministerio de Educación
Gobierno de Chile

MPE

Galactic Center VR – available now

- Steam: https://store.steampowered.com/app/1240350/Galactic_Center_VR/
- Viveport: https://www.viveport.com/apps/21f8b24c-783b-4af2-8e81-a63a14553721/Galactic_Center_VR/
- Free!
- English y Español
- Requires PC-powered VR headset
  - standalone VR coming soon

crussell@udel.edu
T: @chrastropher

T: @GalacticCntrVR
F: GalacticCntrVR