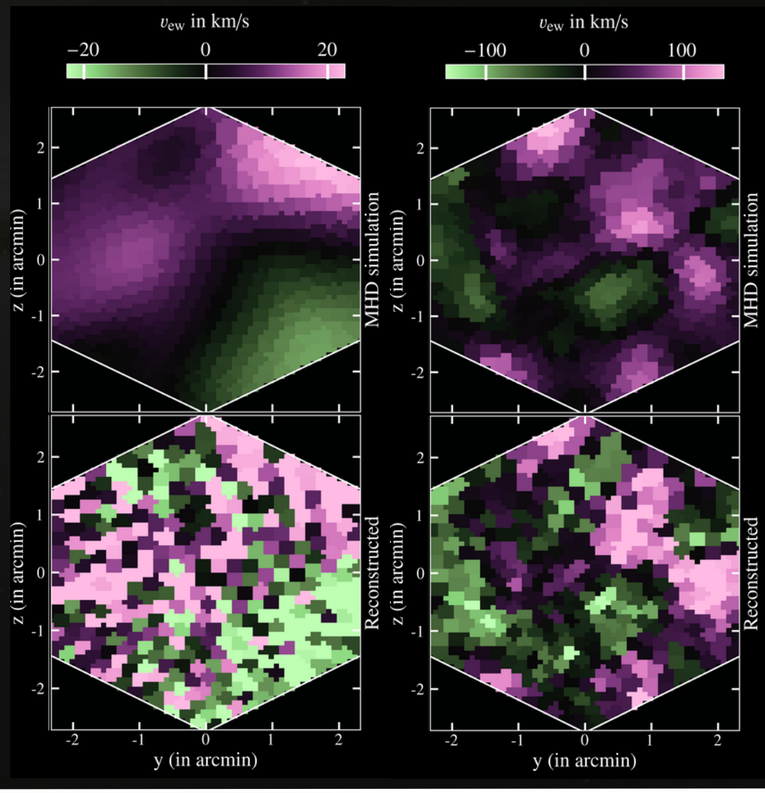
- The magneto-thermal instability injects at rather large scales $\ell_i \gtrsim 100$ kpc with moderate intensities $v|_{\mathrm{rms}} = \mathcal{O}(100\ \mathrm{km/s})$. (1)
- At large radii, the line of sight is aligned with the azimuthal (horizontal) direction wherever the plasma emissivity is higher : (2)

$$v_{\mathrm{los}}|_{\mathrm{rms}} \sim v|_{\mathrm{rms}}/2 \sim \mathcal{O}(50\ \mathrm{km/s}).$$

- Turbulent fluctuations will statistically cancel each other when observing along the line of sight s : (3)

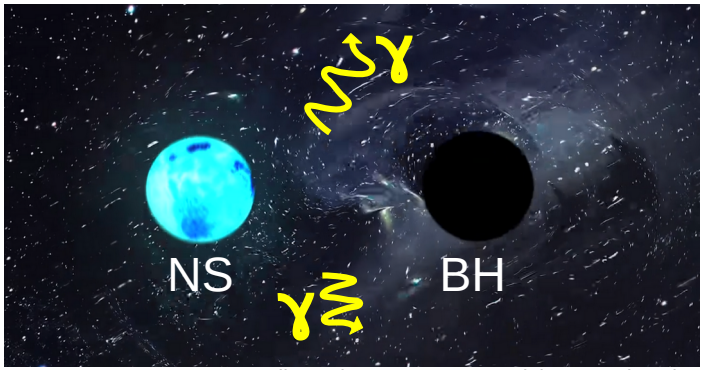
$$v_{\mathrm{ew}}|_{\mathrm{rms}} = \mathcal{O}(10\ \mathrm{km/s}).$$ (4)



Enhanced particle acceleration in a pulsar wind interacting with a companion

Valentina Richard Romei (2nd year PhD), Benoît Cerutti

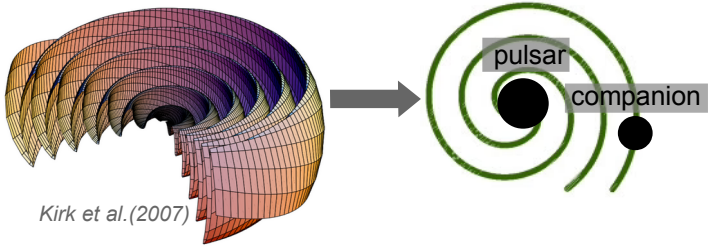
Context



Credit: Carl Knox, OzGrav-Swinburne University

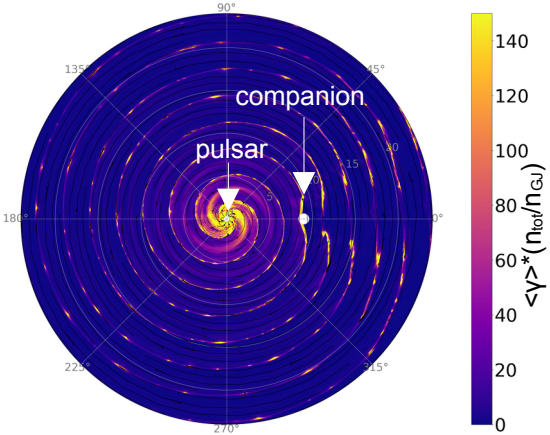
Electromagnetic precursor ?

1st step: pulsar-companion

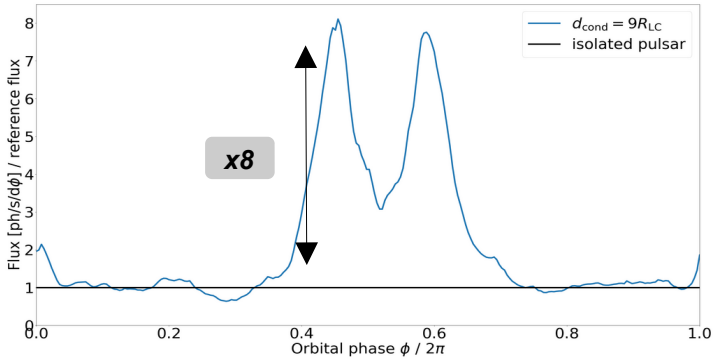


3D view of the current sheet

Results - 2D equatorial PIC simulations



Particle acceleration



High-energy lightcurves

Parametric study: separation and radius of the companion

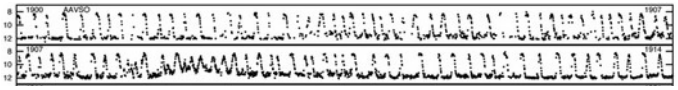
Conclusions and prospects

- Promising results: - enhanced particle acceleration
  - significant increase of the non-thermal radiation
- Next step: BH-NS interaction in GRPIC

MHD winds in quiescent compact binaries

Marc Van den Bossche, Geoffroy Lesur and Guillaume Dubus

Context and methods



What drives accretion during quiescence ?

- Cold and little ionised ⟹ Resistivity ⟹ No MRI (Gammie & Menou, 1998)
- DIM requires $\alpha = 10^{-2}$ in quiescence
- Spiral shocks are not enough (Van den Bossche+2023)

⟶ **New finite-volume GPU code Idéfix (Lesur+2023) for global 3D MHD simulations with**

H/R = 10^{-2} + Ohmic resistivity

Results

MHD wind

Inner disc
- Turbulent
- Magnetically dominated: $\beta \ll 1$
- Elevated: H/R $\gg 10^{-2}$

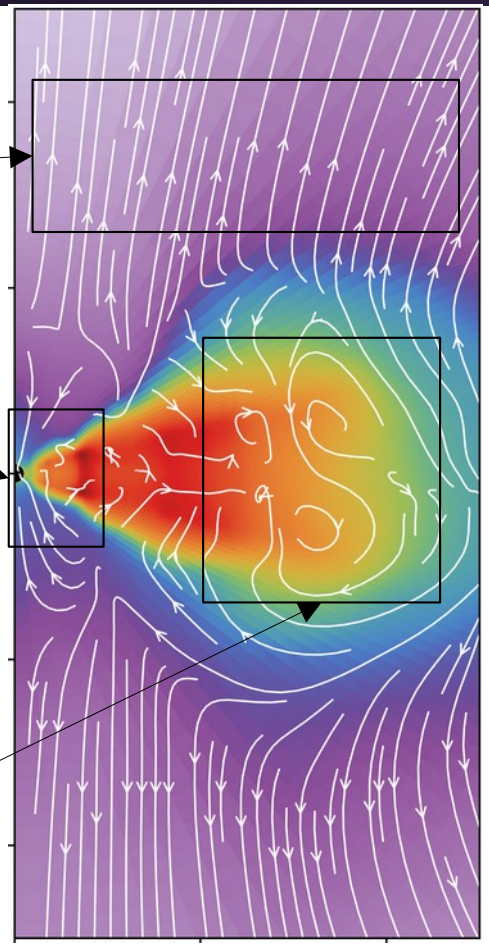
⟶ JED / MAD

Ferreira & Pelletier 1995, Ferreira+2006, ...

Igumenshchev 2008, Tchekhovskoy+2011, ...

Outer disc
- Thermally dominated

⟶ SAD

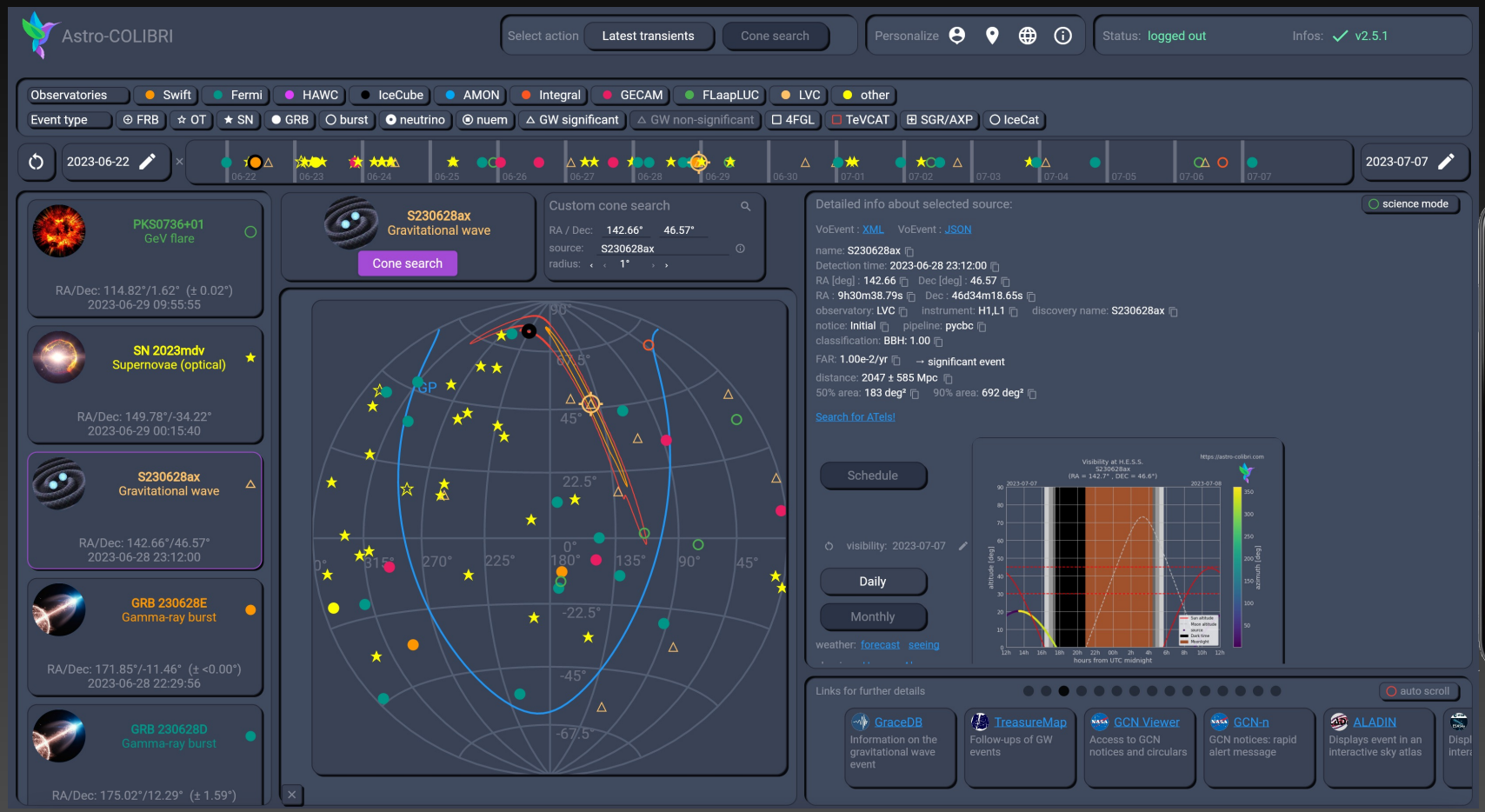


Gas density and streamlines

Astro-COLIBRI

A tool for transient and multi-messenger astronomy

Mathieu de Bony, Fabian Schüssler, Patrick Reichherzer, Atilla Alkan, Jayson Mourrier



tilepy

- Cone search, visibility, link to external platform
- GW scheduling using tilepy
- Citizen science (eg. RAPAS, unistellar, ….)
- ….

astro-colibri.science

MOTS
anr
AHEAD 2020
Funded by the Horizon 2020 Framework Programme of the European Union
Grant Agreement No. 871158

The Very-high-energy Open Data Format (VODF)

Towards a shared, open data format for VHE astroparticle

Landscape of the VHE astrophysics

- Increasing needs for multi-wavelength and multi-messager analyses
- Increased open data, in phase with the Open Science roadmaps
- Development of open analysis libraries

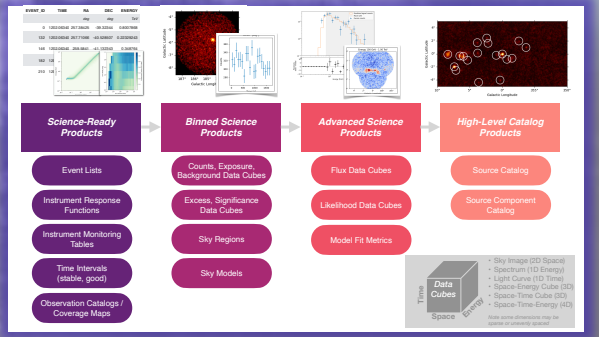
The VODF initiative

Created in 2023 with 11 astroparticle experiments, having different observation techniques (IACT, WCD, Neutrino Detectors).

Well structured: Steering Committee, 3 Lead Editors, 2 Conveners, Governance letter

Open: public GitHub, free contributions

Formatting high-level data:



IVOA

Ressources

https://vodf.readthedocs.io/

arXiv:2308.13385

B. Khélifi, APC, IN2P3/UPC

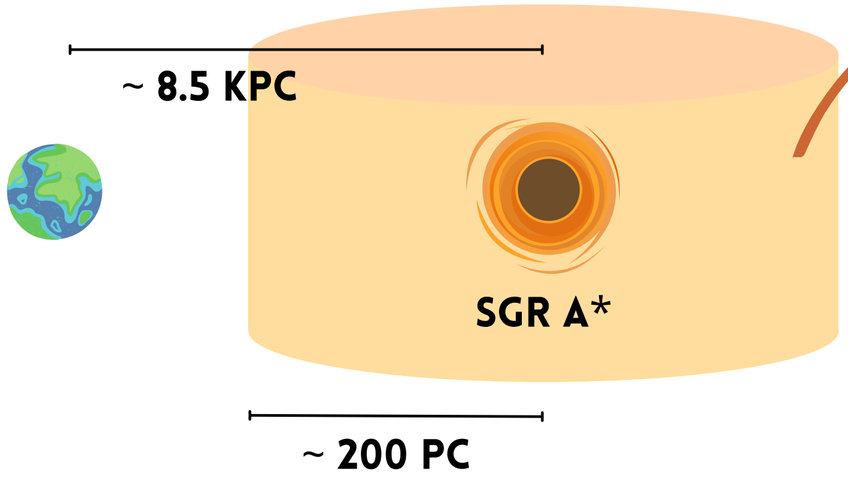
Université Paris Cité

SRUTHI RAVIKULARAMAN

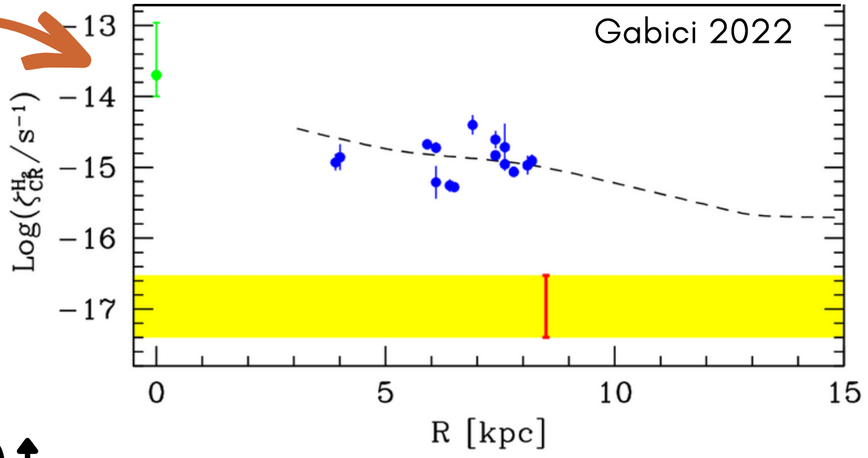
Stefano Gabici & Andrea Goldwurm

Talk – Journées PNHE 2023

CENTRAL MOLECULAR ZONE



"COSMIC-RAY" IONISATION RATE



EXCESS IN IONISATION RATE

+

NO EXCESS IN GAMMA RAYS

=

EXCESS IN LOW-ENERGY COSMIC RAYS?

COSMIC RAYS CAN NOT BE THE EXCLUSIVE IONISING AGENTS OF THE CMZ

CR POWER NEEDED:

10^{40} **ERG/S**