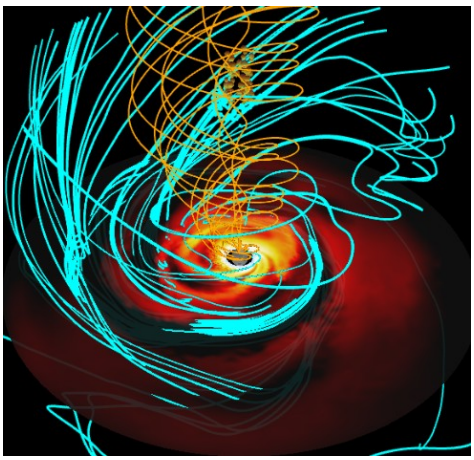

Antonios Nathanail
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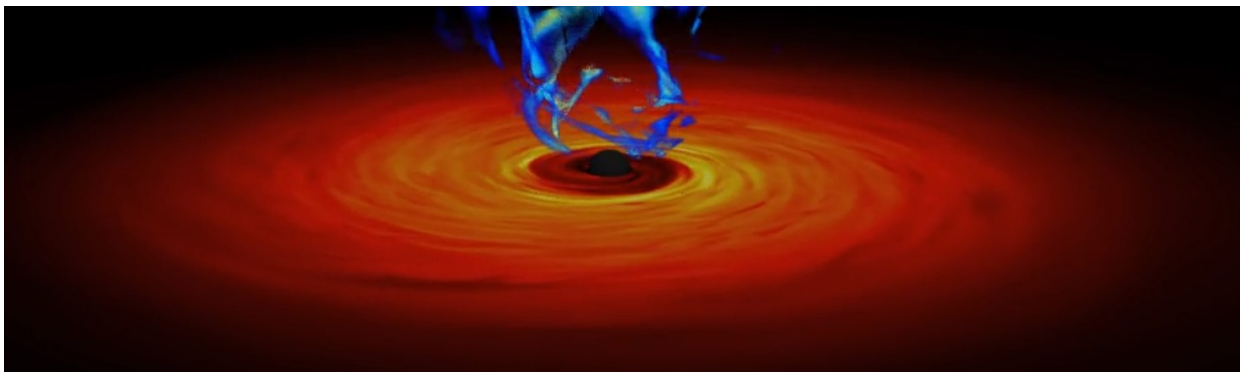
of the Academy of Athens

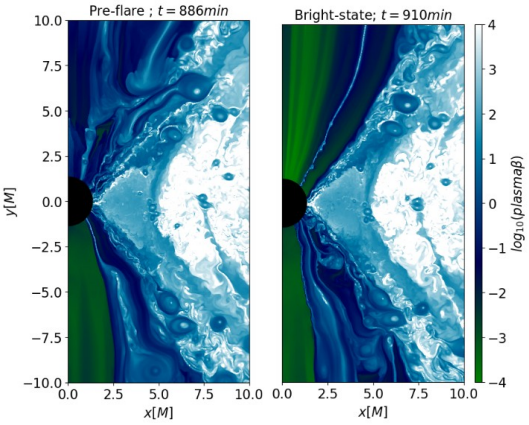
About Me

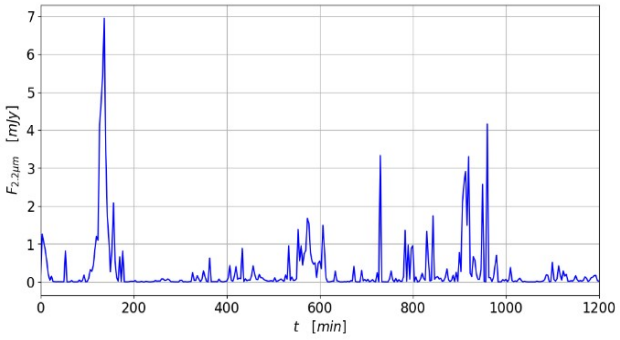
I am an Associate Researcher at the RCAAM of the Academy of Athens, focusing on Relativistic astrophysics. Me research interests span from Black Holes to Neutron stars, Gravity and Relativistic Jets (brief CV).

I explore the fascinating intersections of astrophysics and computational methods. My research spans several key areas in theoretical and observational astrophysics, contributing to our understanding of some of the universe's most extreme phenomena. Below are some of the significant projects I have worked on:



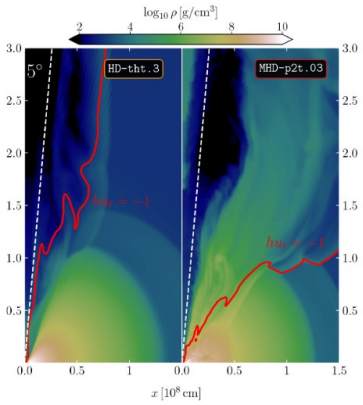
1. **Numerical Simulations of Accretion onto Black Holes**
   Investigating the complex dynamics of matter falling into black holes through advanced computational techniques (link1 & link2).

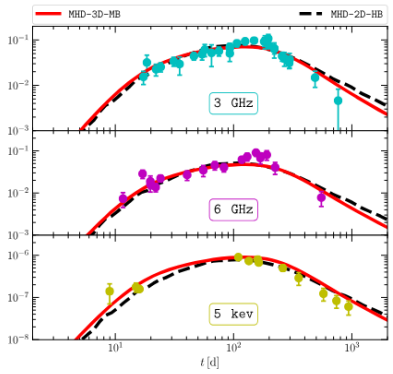




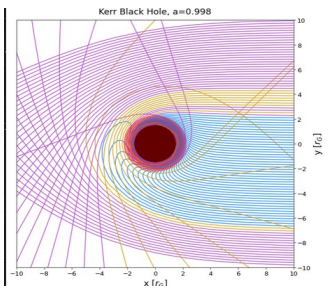
2. **Magnetic reconnection in the vicinity of a black hole**

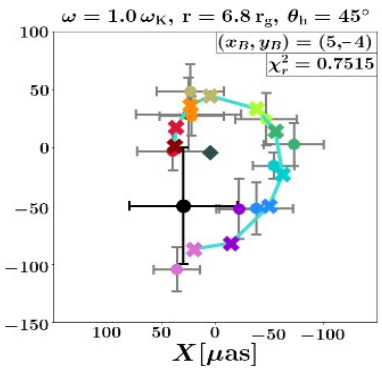
   Investiating the production of flares from plasmoids that generate just outside of the event horizon of supermssive blakc holes like the one at the center of the Milky Way, SgrA* (Dimitropoulos et al. 2024)



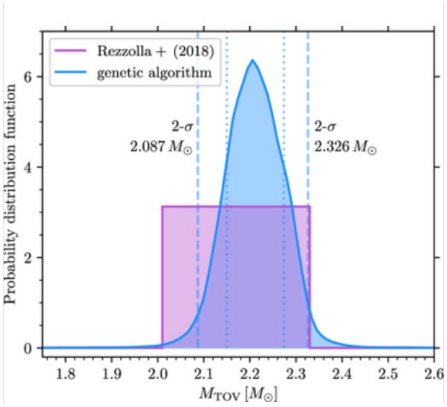


3. **Jet Breakout in Gamma-Ray Bursts**
   Analyzing the conditions and mechanisms behind the explosive jets produced during gamma-ray bursts and modeling observations like GW170817/GRB170817A (Nathanail et al. 2020 & Nathanail et al. 2021).

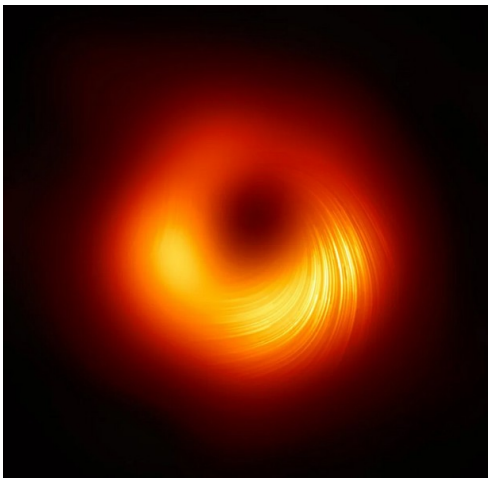




4. **Ray Tracing in General Relativity**
   Developing algorithms for simulating light propagation in strong gravitational fields, enhancing our understanding of relativistic effects and understanding flares from supermassive black holes, like the GRAVITY flare (Antonopoulou & Nathanail 2024).



5. **Neutron Star Mergers Parameter Estimation**
   Employing statistical methods to refine the parameters associated with the mergers of neutron stars, crucial for understanding gravitational waves (Nathanail, Most, Rezzolla 2021 & Mpisketzis Nathanail 2024).



6. **Event Horizon Telescope Collaboration**

   I am a member of the EHT Collaboration where we have published images of the black holes at the center of our Galaxy, SgrA* and M87. I am mainly interested in comparing the observed Black hole image from the ones produced through ray tracing our simulation results (EHT publications).