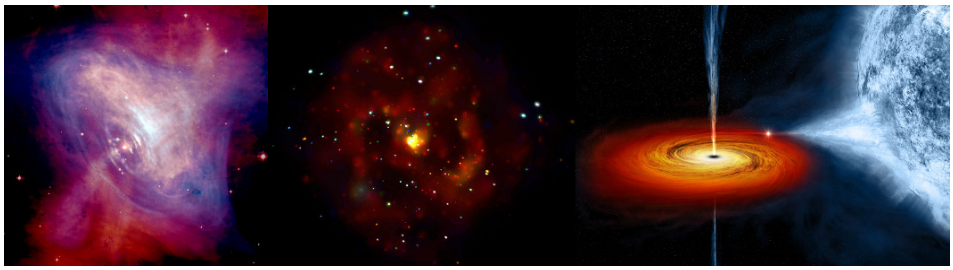

Contribution ID: **103** Type: **not specified**

Viscous accretion flows around the black hole.

Monday, April 3, 2023 9:45 AM (15 minutes)

Viscosity plays a vital role in accretion flows around black holes. It helps in the transport of angular momentum outwards allowing matter to get accreted into the potential well formed by the central compact object. Apart from angular momentum transport, viscosity also heats up the matter. In viscous transonic flows, both with and without shock solutions are possible. Many numerical simulations have shown that with the increase in viscosity, shock moves outwards. However, all these simulations have been done with supersonic injection. Moreover, these simulations used a fixed adiabatic equation of state. We use a relativistic equation of state proposed by Chattopadhyay & Ryu (2009). We have built a simulation code in which the thermodynamics is expressed by the Chattopadhyay & Ryu equation of state. In this work, we have shown analytically as well as numerically that depending on the injection radius, the shock location will move inwards or outwards with the viscosity. Also, we have seen viscous flow showing shock oscillation. It may explain the QPOs seen in black hole candidates.

Presentation Type

Oral

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Session Classification: Black Hole: Theory

Track Classification: Black Hole: Theory