

## Questionable predictions by EHT image of Sgr A\*; observational evidence for Sgr A\* being no BH; de Laval nozzle and its application to astrophysical jets.

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Abstract

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### I. Questionable predictions by EHT image of Sgr A\*

The famous EHT image of Sgr A\* predicts BH features in contradiction with observation:  $a^* = 0.9375$  against  $a^* \leq 0.15$ ; spin direction face-on against edge-on; accretion light variability arising with accretion disks against variability of accretion wind. And there is a theoretical shortcut by **Broderick et al.**: The missing UV bump agrees with degenerate supermassive objects being no BH [1], [2].

Broderick et al [1] overlook the fact that a *degenerate* supermassive object (SMO) could form instead of a BH. In this case, less energy is available for heating the SMO than Broderick et al. assume. This is easy to see: Degenerate stellar objects can be understood as Fermi spheres, with all energy levels occupied up to the Fermi energy - see Wikipedia, Fermi sphere. Infalling matter (fermions) consume energy from their accretion energy in the amount of the Fermi energy in order to become part of the degenerate SMO. The heating of an SMO by infalling matter is less than the accretion energy for each individual fermion by the amount of the Fermi energy.

### II. Observational evidence for Sgr A\* being no BH

Furthermore, [3] proves: If Sgr A\* is a BH then its spin must be  $a^* = 0.90$ . But [1] proves that the spin of Sgr A\*  $\leq 0.15$ .

The purely logical conclusion: Sgr A\* cannot be a BH (contrary to [3], its spin would be too low). These observations of Fragione, Loeb, Daly et al. together are an obvious experimental confirmation for Sgr A\* *not* being a BH [1], [3].

### III. De Laval nozzle and its application to astrophysical jets

Jets of supermassive objects being no BH are quite natural explained by astronomical application of a de Laval nozzle [4]. Since this does not work for BHs it should lead to observable differences between BHs and no BH stellar objects.

### Literature

[1] [Talk-DPG-2023-Questionable predictions of SgrA.pdf](#).

[2] J. Brandes, J. Czerniawski, L. Neidhart: *Special and General Theory of Relativity for physicists and philosophers - Einstein and Lorentz Interpretation, Paradoxes, Space and Time, Experiments*, 2023 Karlsbad, Germany: VRI, Translation of the 5th German edition. ISBN 978-3-930879-14-4. More [www.buchhandel.de](http://www.buchhandel.de) or [www.amazon.de](http://www.amazon.de)

[3] R. A. Daly et al., MNRAS 2024, 428 - 436

[4] P. Subramanian, Fluid Dynamics for Astrophysics, 2021, lecture 31, YouTube