

# Probing the interior of black holes with gravitational waves

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אוניברסיטת בן-גוריון

Q:What's inside a large BH ? A:

Special form of exotic matter

Q:How can we tell ?

A: By the emitted GW when two BH's collide

RB, Medved, Yagi

1704.05789

1701.07444

=====  
RB, Medved

1607.03721

1602.07706

1505.07131

# State of the interior

## Possible distribution of matter

- Classical GR:  
empty, all matter @ center

*But : remnant in disguise,  
unstable to particle production,  
contradicts quantum principles, ...*

- Firewall, Fuzball:  
all matter @ horizon, interior does not exist

*But : unstable to collapse, ...*

- **Distributed throughout the interior region**

- Other proposals: gravstars, wormholes, boson stars, ...

Cardoso, Pani review, to appear

*But : violate some basic principles,  
negative energy, unstable matter, ...*

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