

# UM Physics Department

## Miami 2020 Physics Conference (Online)

**Name:** Dejan Stojkovic

**Title:** In search of a wormhole

**Abstract:**

If a traversable wormhole smoothly connects two different spacetimes, then the flux cannot be separately conserved in any of these spaces individually. Then objects propagating in a vicinity of a wormhole in one space must feel influence of objects propagating in the other space. We show this in the cases of the scalar, electromagnetic, and gravitational field. The case of gravity is perhaps the most interesting. Namely, by studying the orbits of stars around the black hole at the center of our galaxy, we could soon tell if this black hole harbors a traversable wormhole. Alternatively, one can expect the same effect in black hole binary systems, or a black hole - star binary systems, which are actually the cleanest and most sensitive systems for such a search.