Contribution ID: **13** Type: **Talk**

No black holes from light

General Relativity theoretically allows the formation of black holes through the gravitational collapse of purely electromagnetic radiation. However, this scenario would involve electromagnetic strengths surpassing the critical Schwinger limit, resulting in the generation of electron-positron pairs. This quantum phenomenon counteracts the collapse, with the created particles scattering out of the collapsing region, carrying their energy. Here, we show that this dissipative effect alone is enough to prevent the formation of black holes from light in the non-classical regime.

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Session Classification: Talks