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# Galactic center G objects as dust-enshrouded stars near the supermassive black hole

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In this talk, I revisited the model of a dust-enshrouded star orbiting a low-luminosity galactic nucleus (Zajacek et al., 2014, 2016, 2017). Although it is quite challenging for dust to survive in hot X-ray-emitting plasma surrounding supermassive black holes (SMBHs), now we have an observational evidence that compact dusty objects or G objects can approach the SMBH in the Galactic center (Sgr A*) on the scale of a few 1000 gravitational radii. Since there are about ten G objects in the Galactic center, it is more likely that they are dust-enshrouded stars whose gaseous-dusty envelopes are stable within the corresponding tidal (Hill) radii of the order of a few astronomical units. Such a length-scale is consistent with their infrared broad-band spectral energy distributions. Broad emission lines, such as in particular Br-gamma recombination line, can be interpreted to arise within the accretion stream from the circumstellar envelopes forming a compact disc that is truncated by the stellar magnetic field. Alternatively, they could also be associated with circumstellar accretion-disc outflows. In comparison with the line origin in the photoionized envelopes that can generally be tidally perturbed, the scenario involving the circumstellar accretion-disc inflow or outflow can ensure that the line luminosity is rather stable. I speculate about the origin of dust-enshrouded stars (young stellar objects or binary mergers) as well as prospects to detect their signs around other low-luminosity galactic nuclei.

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