

CORRESPONDENCE BETWEEN SONIC POINTS OF RADIATION FLOW AND PHOTON SURFACES

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Recently it was found that there exists mysterious coincidence between radii of sonic points of radiation fluid flow and photon spheres in a large class. The theoretical phenomenon in fluid dynamics on curved spacetime, named Sonic point/Photon sphere (SP/PS) correspondence, appears irrelevantly to the dimensions of spacetime regardless of the dependency of the equation of state of radiation on the dimension. In this talk, after reviewing SP/PS correspondence in the case of spherically symmetric spacetime, we see that the correspondence also holds in the cases of non-spherically symmetric spacetime. In the non-spherical cases, radius of a sonic point of radiation flow coincide with that of a photon surface which is generalization of a photon sphere.