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Electromagnetic Emission from Compact Supermassive Black Hole Binaries

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In this talk, I will discuss possible characteristics of electromagnetic (EM) emission from supermassive black hole (SMBH) binaries. In particular, any detectable EM emission is likely to be time-variable, and contain unique spectral signatures, which should aid identifying SMHB binaries. I will discuss recent hydrodynamical simulations, which suggest quasiperiodic modulations in the accretion rate onto the BHs prior to coalescence. These time-variable EM signatures may be used to identify unique counterparts of gravitational wave sources expected to be detected by (e)LISA and by Pulsar Timing Arrays, or to discover binary SMBHs in time-domain EM surveys. As an example of the latter, the quasar PG1302 was recently discovered to have a 5-yr periodic optical variability. I will comment on the interpretation of this quasar as a SMBH binary candidate and its implications.

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