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Numerical approach to Supermassive Black Hole Binary - Disk interactions MICHAL PIROG, SEAN MCWILLIAMS, SIDDHARTH MAHESH, West Virginia University — The talk will cover the recent numerical investigation of a system composed of a Supermassive Black Hole Binary and a non-self-gravitating, thin, locally isothermal, viscous disk. This work is being conducted in coordination with the recent analytical results for the gap opening criteria due to Lindblad Resonances. I will present a comprehensive description of the numerical methods, numerical code and finally the physical setup. Starting from a toy model, where the binary and the disk are coplanar, I will introduce more general configurations with the inclination angle as a free parameter. For binaries that are surrounded by a sufficiently massive circumbinary disk, we expect that the mutual torques between a binary and a disk will impact the signal observable by pulsar timing arrays. We expect the inclination angle to significantly influence the size of this torque, so that spin-induced precession could also modulate any electromagnetic signal from such a binary, and therefore could help us to identify these sources with conventional telescopes.

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