Self-gravitating tori rotating around black holes in the Keplerian motion MICHAL PIROG, West Virginia University, WOJCIECH KULCZYCKI, PATRYK MACH, EDWARD MALEC, ANDRZEJ ODRZYWOLEK, Jagiellonian University — I will discuss the model composed of a spinning black hole and a massive self-gravitating torus/disk rotating in the Keplerian motion. Such "black-hole-torus" systems are common across the Universe—they are present in the galactic centres and also they are considered as quasi-stationary configurations arose in the merger of compact binaries consisting of pairs of black holes or neutron stars. Such model is not available for analytical methods because of their high mathematical complexity. I am going to present the result of the numerical calculation. Mathematically it is numerical approach to the stationary, free boundary, elliptic, integro-algebraic Einstein-Euler system. Physically we investigated the nature of the "Keplerian rotation" which is completely different in the Newtonian theory and in the general relativity.

Michal Pirog
West Virginia University