Contribution ID: 41

AGN outflows in the emission-line region of the gravitational wave recoiling black hole candidate 3C 186

Tuesday, 9 October 2018 11:45 (15 minutes)

3C 186 is a powerful radio-loud QSO at z~1. Recently we found that its spectrum shows evidence for significant velocity offsets between the broad and narrow emission line systems. This, as well as the presence of a spatial offset between the QSO and the center of its host galaxy, led us to propose this object as one of the rare examples of gravitational wave recoiling black hole candidates known so far. I will present new results from our Keck/OSIRIS IFU observations. The goal of the observations is to study both the morphology and the kinematics of the [OIII]5007 emission line region of the quasar. The results show that i) the spatial structure of the NLR is complex and we find evidence for AGN feedback; ii) we detect both the narrow and the broad components of the Hbeta line. The narrow component generally follows the kinematics of the [OIII] line, while it is likely that the broad component is significantly blue-shifted. The results are in agreement with the interpretation of the QSO as a GW recoiling black hole. The observed outflows are most likely the effect of radiation pressure on the (photoionized) gas in the interstellar medium of the host galaxy.

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