

gets to fall down the black hole — about one percent.

Over about the same few years Miller and Antonucci, who started out as a graduate student at the University of California at Santa Cruz campus, where the Lick Observatory is headquartered, have been measuring the polarization in the light from quasars. Quasars appear in the telescope as points of light. Detail cannot be distinguished, so evidence of structure must be indirect.

Light from the centers of quasars ought to be generated unpolarized, that is, vibrating in random directions. Yet Miller and Antonucci found some quasars with significant polarization parallel to and some with polarization perpendicular to the direction of the axis of the radio-emitting lobes.

Light that is unpolarized can be polarized by being reflected. Where the polarization is parallel to the axis, the amount of polarization is fairly small. This leads to the conclusion that the polarized light has been reflected off a thin (and probably transient) accretion disk, while at the same time a lot of unpolarized light is coming to us directly. In the case of parallel polarization the proportion of polarized light is quite high. This would indicate that the light had come out past a fat and relatively darker accretion disk and been reflected toward us by matter that happened to be in the neighborhood. Miller and Antonucci conclude: "Our findings give new support for the accretion disk picture." □

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