PHYSICS AND ASTRONOMY COLLOQUIUM

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JPL/NASA

Surprising New Insights into Quasars from the WISE Satellite

We now believe that every large galaxy hosts a supermassive black hole at its core, with masses ranging from millions to billions of times that of our Sun. At times, these black holes are actively accreting, causing the nuclei of the galaxies to shine brightly across the electromagnetic spectrum. However, in many, perhaps most quasars, obscuring material along the line of sight shields us from directly viewing the inner nucleus. This obscuring material is heated, and emits strongly in the mid-infrared. NASA's Wide-field Infrared Survey Explorer, or WISE, has mapped the entire sky in mid-infrared light with exquisite depth and clarity. This allows us to find luminous quasars across the whole sky due to this heated material, more than tripling the number of quasars known. I will discuss several surprising new insights into quasars that have come out of this work. In brief, the dominant paradigms do not match our observations, with potentially important implications for the role of quasars in the growth of galaxies.

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