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The Most Massive Black Holes in the Local Universe

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For over three decades, the giant elliptical galaxy Messier 87 in the Virgo Cluster has hosted the most massive known black hole in the local universe. New observational data in the past several years have substantially expanded dynamical measurements of black hole masses at the centers of nearby galaxies. I will describe recent progress in discovering black holes up to twenty billion solar masses. This new population of supermassive black holes is revising our understanding of the symbiotic relationship between black holes and galaxies, and of the gravitational wave signals from merging binaries targeted by ongoing pulsar timing array experiments.