The host galaxy of the gamma-ray loud Narrow-Line Seyfert 1 PKS 2004-447

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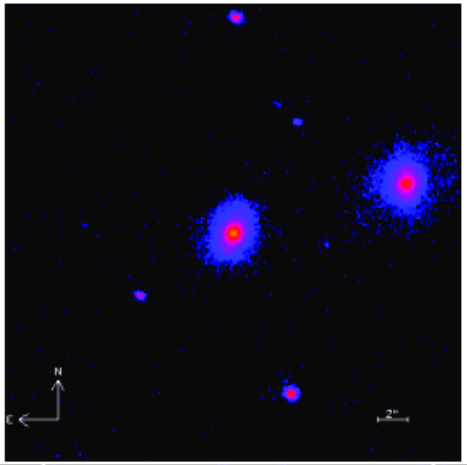
SMBHs launching gamma-ray producing jets, have ubiquitously been found to be hosted by massive elliptical galaxies. Since elliptical galaxies are believed to be built through galaxy mergers, AGN launching relativistic jets are associated to late stages of galaxy evolution.

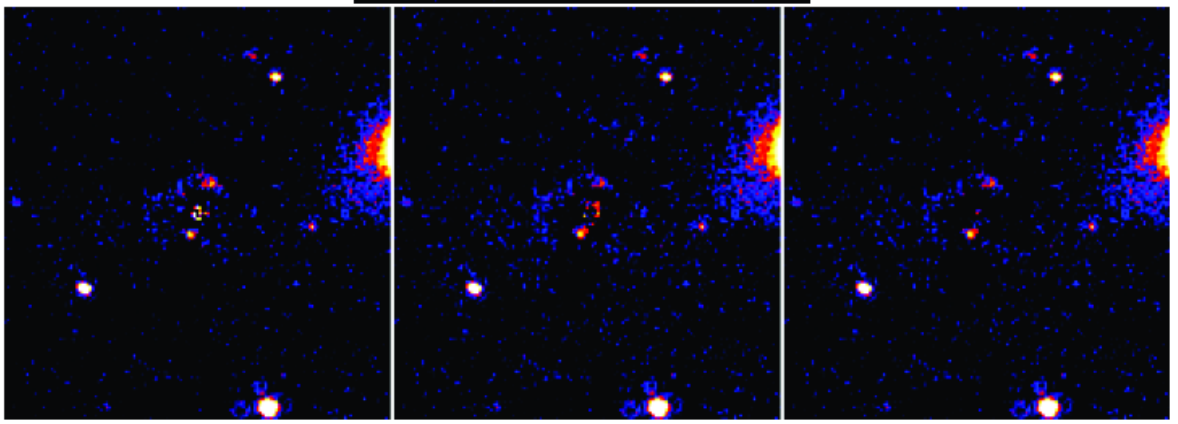
This scenario has been challenged by detection of gamma-ray emission from a few Narrow-Line Seyfert 1 (NLSy1) galaxies. As a class they are radio-quiet, hosted in lower-mass spiral galaxies, and have high accretion rates onto less massive SMBHs.

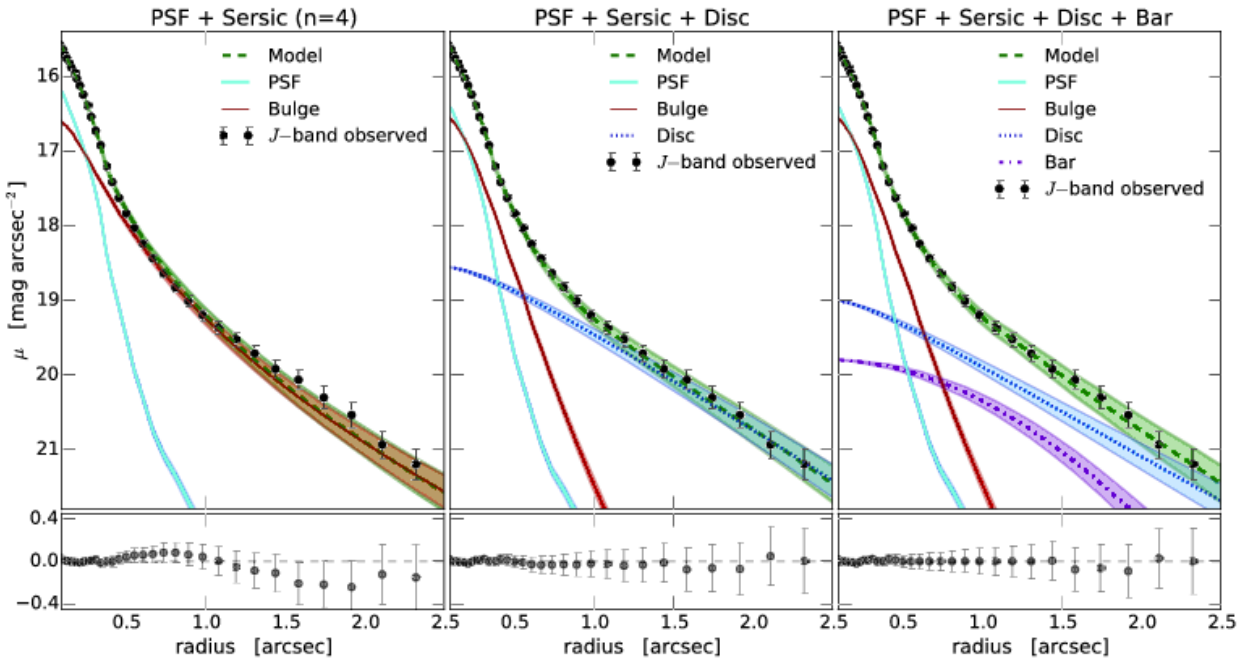
Here: ESO VLT+ISAAC J- and Ks-band NIR imaging of PKS 2004-447.



PKS 2004-447
z=0.240

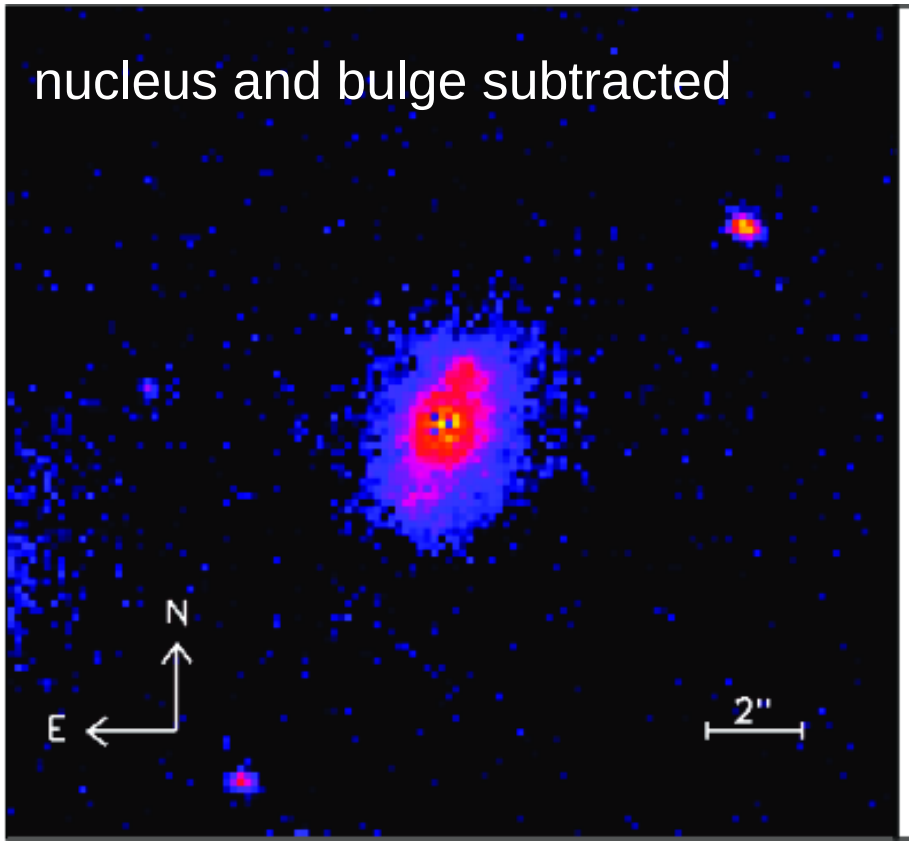
J-band image taken with
ISAAC/VLT

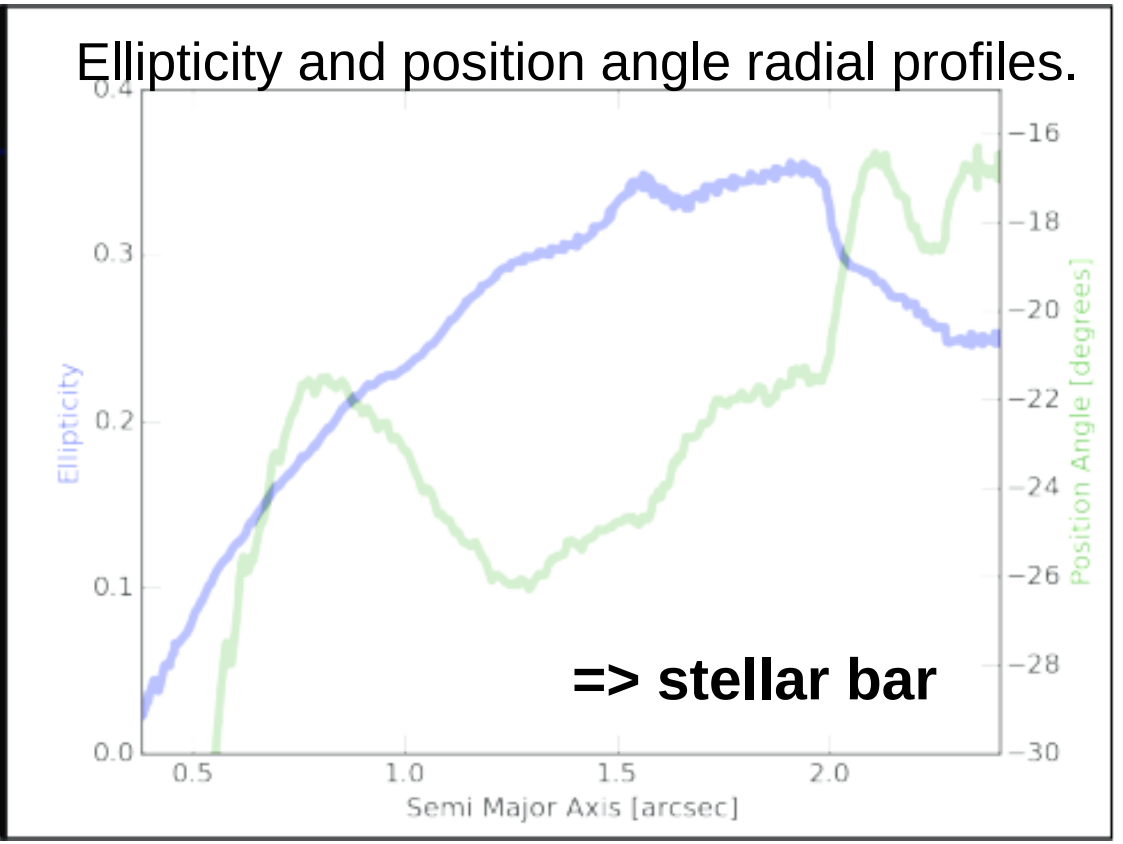




2D modeling of the surface brightness distribution => not a giant elliptical, but bulge, disc and bar.

The bulge is not classical but **pseudobulge**, as in radio-quiet NLSy1s.





PKS 2004-447 is the first AGN where prominent relativistic jets, able to accelerate particles up to the highest energies, are launched from a system where both black hole and host galaxy have had secular growth.

This suggests an alternative black hole-galaxy co-evolutionary path to develop powerful relativistic jets that is not solely merger-driven.