The mass relation between the SMBH and the bulge for NLS1s and BLS1s

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Using the bulge data from AGN image decomposition, we calculate the ratios of the central supermassive black hole mass(SMBH) to the bulge mass ($M_{\rm bh}/M_{\rm bulge}$) in a sample of X-ray selected AGNs, including 15 Narrow-line Seyfert 1 galaxies (NLS1s) and 18 broad-line Seyfert 1 galaxies (BLS1s). We found that the mean value of $\log(M_{\rm bh}/M_{\rm bulge})$ is -3.81 ± 0.11 for 15 NLS1s, and -2.91 ± 0.13 for 18 BLS1s, showing the lower $M_{\rm bh}/M_{\rm bulge}$in NLS1s relative to BLS1s. The calculation shows that the bulge mass from the host image decomposition in NLS1s is statically smaller than that from Hubble-type correction method, a linear mass relation is suggested for NLS1s and a nonlinear mass relation for BLS1s