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M-M PAPER, MORPHOLOGICAL BIAS

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ABSTRACT

abstract
Subject headings: keywords

1. INTRODUCTION

More than two and a half decades ago, Dressler (1989) foresaw a "rough scaling of black hole mass with the mass of the spheroidal component", as suggested by the sequence of five galaxies (M87, M104, M31, M32 and the Milky Way). His "rough scaling" was a premature version of the nowadays popular correlation between black hole mass, $M_{\rm BH}$, and host spheroid luminosity, $L_{\rm sph}$, and also host spheroid mass, $M_{\rm sph}$ (Yee 1992; Kormendy & Richstone 1995; Magorrian et al. 1998; Marconi & Hunt 2003; Häring & Rix 2004). These early studies were dominated by high-mass, early-type galaxies, for which they reported a quasi-linear $M_{\rm BH} - M_{\rm sph}$ relation, in agreement with a dry-merging formation scenario. Subsequent studies of the $M_{\rm BH} - L_{\rm sph}$ and $M_{\rm BH} - M_{\rm sph}$ diagrams (Ferrarese & Ford 2005; Lauer et al. 2007; Graham 2007, 2008; Gültekin et al. 2009; Sani et al. 2011; Beifiori et al. 2012; Erwin & Gadotti 2012; Vika et al. 2012; van den Bosch et al. 2012; McConnell & Ma 2013; Kormendy & Ho 2013; Rusli et al. 2013; see Graham 2015 for an extensive review about the early discovery and successive improvements of these correlations) used similar galaxy samples, which remained dominated by high-mass, early-type objects having $M_{\rm BH} \gtrsim 0.5 \times 10^8$ M$_\odot$, and therefore recovered a near-linear relation. However, the consensus about a linear $M_{\rm BH} - M_{\rm sph}$ correlation was not unanimous. Some studies reported a slope steeper than 1, or noticed that low-mass spheroids were downwards offset from the relation traced by their high-mass counterparts (Laor 1998; Wandel 1999; Laor 2001; Ryan et al. 2007).
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2. DATA

3. ANALYSIS

4. RESULTS

5. CONCLUSIONS

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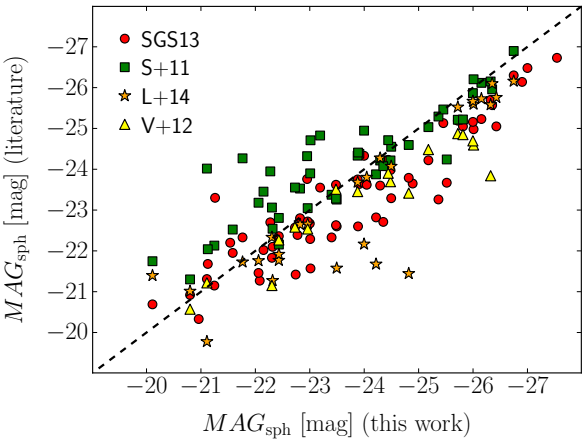

Fig. 1.—

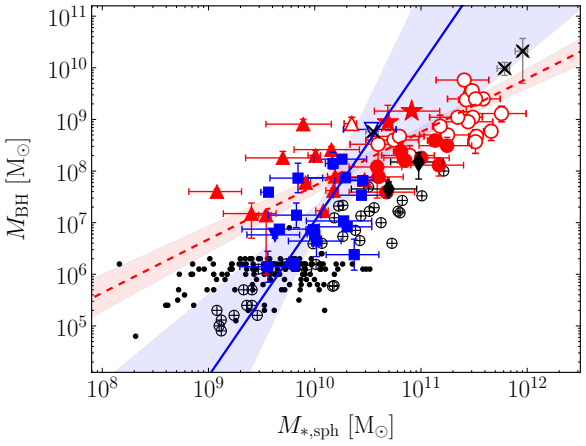

Fig. 2.—

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