To the Editor and Referee,

We wish to once again extend our sincere gratitude for your consideration and attention to this work. We have considered the comments below and hope the updated manuscript has fully addressed the referee's concerns and suggestions.

Changes made to the manuscript include the following:

1. **Discussions on the stellar mass catalogs (LAMBDAR and MAGPHYS) have been added to Section 3: Data and Observations.**
2. **Significant additions to the discussion of empirical fits and Einstein radius estimates have prompted the addition of Section 6.1 and the relocation of some relevant points to this section from Section 3.3.**
3. **In Section 6.1, velocity dispersion estimates from the Auger+ relation, as well as the resulting Einstein radius estimates, are compared with those of the Zahid+ relation utilized in Section 3.3.**
4. **In Section 6.1, measured "true" Einstein radii of two SLACS lenses (Bolton+2008) are compared with the three calculated Einstein radius estimates for each.**
5. **K-S tests for the LinKS candidates are conducted with parent samples that include a range of values for the unknown "empirical factor".**
6. **The absence of stellar mass measurements from the LAMBDAR catalog has been more clearly stated.**
7. **The GalaxyZoo candidate catalog stellar masses have been updated to show values from the LAMBDAR catalog.**
8. **All mentions of "point-mass" have been changed to "thin-lens".**
9. **The Auger+ mass relation has been corrected to "power-law profile".**

Reviewer's Comments:
I still have some moderate comments on this revision. I'd be happy to recommend it for publication once these comments get properly addressed.

Comments:

Section 3

>>> Discussions on why the authors chose LAMBDAR over MAGPHYS are needed in the manuscript, given that the two stellar masses are systematically offset. The authors argued in their response that they chose LAMBDAR because MAGPHYS leads to unreasonably small Einstein radius estimates, which, to me, is not a sensible reason even though LAMBDAR is likely the more appropriate choice.

>>> From Taylor+ 2011 and Wright+ 2018, I can see Taylor+ 2011 scaled GAMA matched-aperture photometry according to the r-band total flux given by a Sersic fit before estimating stellar masses, while Wright+ 2018 directly used matched-aperture photometry. Could this scaling explain why Taylor+ 2011 gives higher stellar masses, which are better estimates of the total stellar masses? I wish the authors could have spent a little more time understanding (or at least trying to understand) this offset before claiming "The source of this discrepancy ... is unknown to us".

<<< The MAGPHYS SED fit estimate of the M* and the LAMBDAR photometry estimate using the prescription from Taylor+ (2011) use both the same LAMBDAR photometry on KiDS data. There is no difference in the input values as the correction for the Sersic fit on GAMA apertures is only done in the Taylor+ (2011) use on SDSS images. This is an updated data-release (see also Taylor+ 2020) of the GAMA collaboration with LAMBDAR photometry. The photometry is the same, the difference occurs in the conversion to a stellar mass. Considering MAGPHYS is calibrated on disk galaxy SEDs and the Taylor+ 2011 conversion only corrects optical colors for dust and redshift and then converts the reddest filter to a stellar mass using a computed mass-to-light ratio. This latter mass-to-light ratio is calibrated on nearby “red and dead” ellipticals. This makes this stellar mass estimate a little more appropriate for our target galaxies. See for example the discussion in Cluver+ (2014) and Kettlely+ (2017) on the scatter that occurs between stellar mass conversions. Given that both estimates use the same photometry, no aperture correction and the same IMF and stellar models, it is unclear to us where the offset originates from but we suspect it is the calibration population (star forming galaxies for MAGPHYS and passive ellipticals for Taylor+ (2020). This has been added to the manuscript.

Section 3.1

>>> What is the authors' definition of "reliable stellar mass estimates"? Do the unreliable ones have significantly larger uncertainties in stellar mass or simply don't have stellar mass measurements from the LAMBDAR catalog?

<<< They do not have stellar mass measurements from the LAMBDAR catalog. This indicates a photometry issue. This has been more clearly stated in the paper.

Section 3.2

>>> Do all the 13 GalaxyZoo candidates have reliable LAMBDAR stellar masses? Stellar masses shown in Table 4 are presumably MAGPHYS stellar masses, as they are the same as in the previous manuscript.

<<< Yes, they do! That was a mistake in updating the table. Thank you for pointing this out. It has been addressed.

Section 3.3.1

>>> Again, "point-mass" is inappropriate! For a point-mass model, there is essentially one mass, so enclosed mass = total mass. As I said in the previous report, Equation (1) is valid for any thin lens, so there is no need to introduce a point-mass model.

<<< We have changed all “point-mass” to “thin lens”. Thank you for the correction!

>>> The relation in Auger+ 2010 assumed a power-law profile instead of "an isothermal profile".

<<< This has been addressed.

>>> It's really interesting to see a systematic offset between the two \theta_E estimates. The authors claimed that their second method likely underestimates the Einstein radii because Petrillo+ 2017 found \sigma_SIS to be generally higher than \sigma_* for their lens candidates. However, the definitions of the velocity dispersion in Petrillo+ 2017 and Zahid+ 2016 are different, so the finding in Petrillo+ 2017 is not necessarily valid here. \sigma_* in Petrillo+ 2017 is the velocity dispersion within the SDSS/BOSS fiber (i.e. 3"/2" aperture), while the velocity dispersion in Zahid+ 2016 has been corrected to a fiducial physical aperture of 3 kpc, which is progressively smaller than 2" at z >~ 0.1. As a result, the velocity dispersion derived by the second method should generally be higher than \sigma_* used in Petrillo+ 2017. This difference can reach a few percent, which appears to be comparable to the difference between \sigma_SIS and \sigma_* seen in Petrillo+ 2017.

<<< That is an interesting point that I had not considered. Thank you for bringing it up. This consideration has been added to the paper, along with considerations of several questions below, in a new subsection 6.1 of the Discussion section. The following comments look more closely at the two SLACS lenses and the results of deriving velocity dispersion estimates from the Auger+ M*-sigma relation.

>>> In fact, I would expect the Einstein radii estimated from the second method to be (slightly) larger than the true values because the velocity dispersion derived from Zahid+ 2016 relation should generally be higher than the velocity dispersion within the Einstein radius, which is closer to \sigma_SIS.

<<< For the objects whose true Einstein radius is known (the two SLACS lenses presented below), the true Einstein radius is higher than those calculated from the velocity dispersions derived from Zahid+ and Auger+. The measured Einstein radii (below) lie right in between the SIS and thin lens estimates. While this N=2 example is far

from conclusive, it does suggest that the true Einstein radius may generally lie in the region of this systematic offset between thin lens and SIS estimates.

>>> How do the estimated Einstein radii compare to the true Einstein radii for the two SLACS lenses?

<<< We have compared the true Einstein radius measurements of the two SLACS lenses from Bolton+2008 to estimates of the thin lens approximation using the mass fit from Auger+2010, the SIS estimate using the velocity dispersion fit from Zahid+2016, and the SIS estimate using the velocity dispersion fit suggested by the referee from Auger+2010 (see below for more details on the application of that fit). Here are the results.

GAMA ID: 136604 (recovered in LinKS and GalaxyZoo)
SDSS ID: J1143−0144
Log_stellar_mass: 11.66
Einstein radius :
theta_E_SIE (Bolton+) = 1.68 arcsec (* true Einstein radius)
theta_E_thin_lens (Auger+) = 2.11
theta_E_SIS (Zahid+) = 1.35
theta_E_SIS (Auger+) = 1.20

For this example, the true Einstein radius (Bolton+) is very near the midpoint between the SIS (Zahid+) and thin-lens (Auger+) estimates, while the SIS (Auger+) estimate underestimates the true value by half an arcsecond.

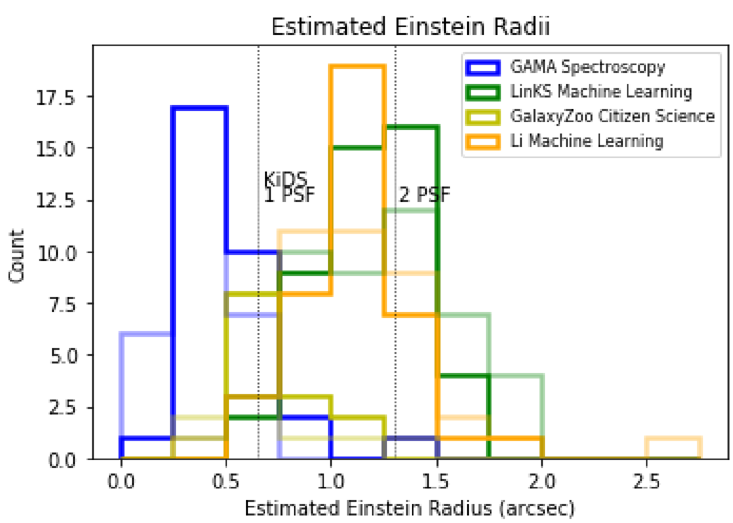
GAMA_ID: G216398 (not recovered by any of the three catalogs)
SDSS_ID: J0912+0029
log_stellar_mass: 11.87
theta_E_SIE (Bolton+) = 1.63" (* true Einstein radius)
theta_E_thin_lens (Auger+) = 2.34
theta_E_SIS (Zahid+) = 1.76
theta_E_SIS (Auger+) = 1.42

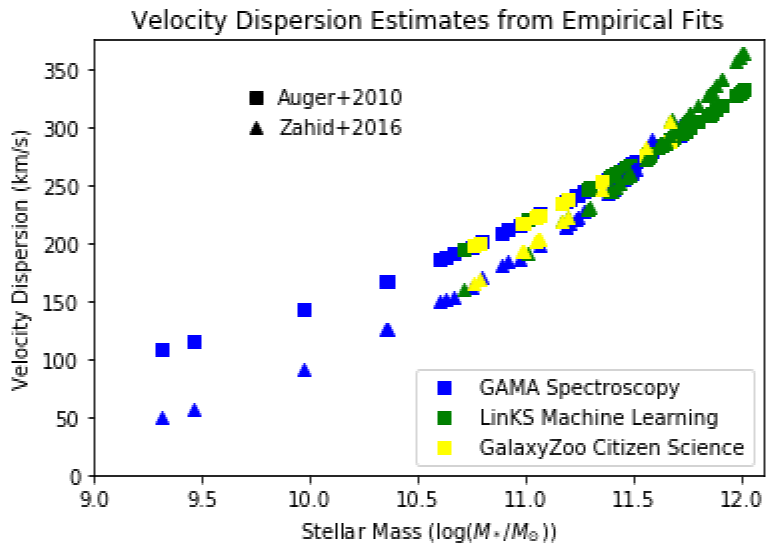
It appears that the Zahid+ fit slightly overestimates the true Einstein radius in this case, but the true Einstein radius still exists between the lowest SIS estimate (Auger+) and the thin lens estimate. This may be a result of the fact that the Zahid+ velocity dispersion fit is less appropriate than the Auger+ fit for the highest-mass galaxies, though the Zahid+ estimate is in fact the closest to the true value (of the three models we have applied) for both examples. This has been added to the manuscript.

>>> How do the estimated Einstein radii compare to the current two sets of Einstein radii if the stellar mass - velocity dispersion relation in Auger+ 2010 is used? The velocity dispersion in

Auger+ 2010 is corrected to r_e/2, which is well matched to the typical Einstein radius of SLACS lenses. So this relation may give a better estimate of the Einstein radius than the second method, especially for galaxies with SLACS-like properties (i.e. mass, redshift, size).

<<< There are minor differences (see the plots below). The difference between the Zahid conversion and the Auger+ conversion may be due to the differences in parent samples. The Zahid prescription is based on a range of masses as well as accounting for different ranges of redshift (M*/Msol > 10e9 from SDSS at z < 0.2, and M*/Msol > 10e9.5 at z > 0.2) while the Auger+ relation is fit to a much smaller sample of SLACS lenses with a mean of 10e11.33, min 10e10.43, max 10e11.79. This would make the Auger+ or Zahid+ prescription more appropriate for different selection depending on the mass ranges involved. We elect to use the Zahid conversion because it is fit to a larger sample that covers the entire range of masses occupied by the candidates in consideration.
The bold lines in the histogram below represent the SIS calculations using velocity dispersions from the Auger+ fit. The lighter lines represent those calculated from the Zahid+ fit (the same used in the most recent iteration of the paper). The scatter plot shows that the Auger+ fit results in higher velocity dispersions for candidates at lower mass and lower velocity dispersions for candidates at higher mass (with respect to the Zahid+ calculations). This result then translates to the Einstein radius in the same way. The estimates using the different mass conversions all fall on either side of the measured Einstein radius for SLACS lenses (see the example above). We add these considerations, as well as the velocity dispersion plot (middle) below to subsection 6.1.





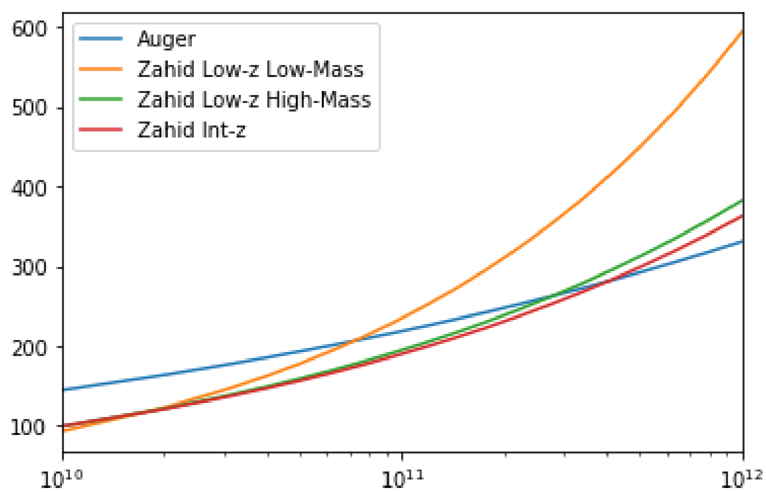


Figure 9

>>> I don't think "the point mass estimate decreases with redshift" leads to "the differences ... are pronounced at low-redshift". To me, this trend with redshift suggests that some redshift-related effects haven't been properly accounted for in one of the two methods or both. I hope it would become clearer when Einstein radii from the stellar mass - velocity dispersion relation in Auger+ 2010 are computed.

<<< The Auger+ relation is a different conversion from velocity dispersion to mass, but there is still no explicit dependence of the Einstein radius estimate on the lens distance if one assumes a given source to lens ratio. This will still result in greater differences between the thin lens and SIS estimates at lower redshift than at higher redshift. If the lower redshift sample includes more lower-mass galaxies, this might reduce the

difference somewhat. However, the two SLACS examples above suggest that the real Einstein radii are in between the thin lens and the SIS estimates. There is not an immense difference in the SIS estimates. These two simple models are by no means complete representations of the physical systems, as they lack some complexities that introduce uncertainty as assumptions and simplifications are made, but the structure of their mathematical formulations do introduce a greater difference at low redshift, which is our point in this case. Additional effects may have biased the empirical fits from both Auger+ and Zahid+, which is why we elect to use the fit with the larger sample and wider range of data.

Section 5

>>> There was a typo in my report regarding the KS test results for the LinKS sample, i.e. "GAMA spectroscopy sample" should be "LinKS sample". The authors claimed that the LinKS sample is "optimized for identifying high-mass candidates at low redshift". My question was, to what degree is the detected redshift "bias" related to not including the empirical factor in making the GAMA equatorial LRG parent sample? The authors suggested that this empirical factor should be larger than 1. Then I think considering it in the LinKS lens candidate sample but not the LRG parent sample would bias the lens candidate sample against high redshifts. I suggest the authors to explore this possibility by computing the KS metrics for redshift when a range of empirical factors are applied.

<<< Utilizing a range of empirical factors (1, 1.5, 2, 2.5, and 3) we find that results of KS-tests show only mild dependence on this empirical factor. Here are the results, which have been added as a Table 3 to the paper:

Factor	**Parent Sample Objects**	**z - KS metric**	**z - p value**	**mass - KS metric**	**mass - p value**
1	**20009**	**0.2409**	**0.00864**	**0.47**	**1.93E-09**
1.5	**18646**	**0.2634**	**0.00299**	**0.46**	**4.82E-09**
2	**15739**	**0.3196**	**0.000139**	**0.44**	**2.70E-08**
2.5	**12761**	**0.3871**	**1.61E-06**	**0.423**	**1.10E-07**
3	**10421**	**0.4429**	**2.12E-08**	**0.412**	**2.48E-07**

Section 6.2

>>> The part related to the fiber radius mass still seems odd and unnecessary to me. I think the problem is, the two relations used in this manuscript have limitations, for example, based on galaxies at a certain mass range, requiring isothermality, etc. Also, the scatters of the relations have not been considered. Although it's fine to derive some rough estimate of the Einstein radius for candidate selection from these two relations, I suggest the authors to avoid potential exaggerations.

>>> In fact, the comparisons shown in Figure 14 are equivalent to comparing the estimated Einstein radii of the LinKS and GalaxyZoo samples at different source to lens distance ratios to 1". I therefore suggest the authors to completely remove content related to the fiber radius mass, and simply mention in Section 6.2 that "multiple candidates from the other two methods have estimated Einstein radii exceeding 1" for a broad range of source distance to lens distance ratios. This indicates that ...". This is also much easier to understand.

>>> That being said, I'm okay if the authors still insist keeping the fiber radius mass part.

<<< We believe that we have presented the fiber radius mass with clear consideration of the limitations while thoroughly exploring the concept. The referee’s input into this matter was essential in leading to a clearer picture of what we were trying to convey with this section, and this section shows some of the differences introduced by the limitations in the empirical relations and the two lens models utilized. We recognize its equivalence to the basic statement we put forth in previous sections, but we believe it is necessary to consider the effects of redshift and stellar mass that contribute to that Einstein radius of 1”. Please let us know if there is still wordage that appears to exaggerate anything from this section, so that we can adjust it accordingly. We absolutely want the extent of this analysis to not be mistaken for more exaggerated conclusions!