Spatial kinematics of Brightest Cluster Galaxies and their close companions from IFU spectroscopy

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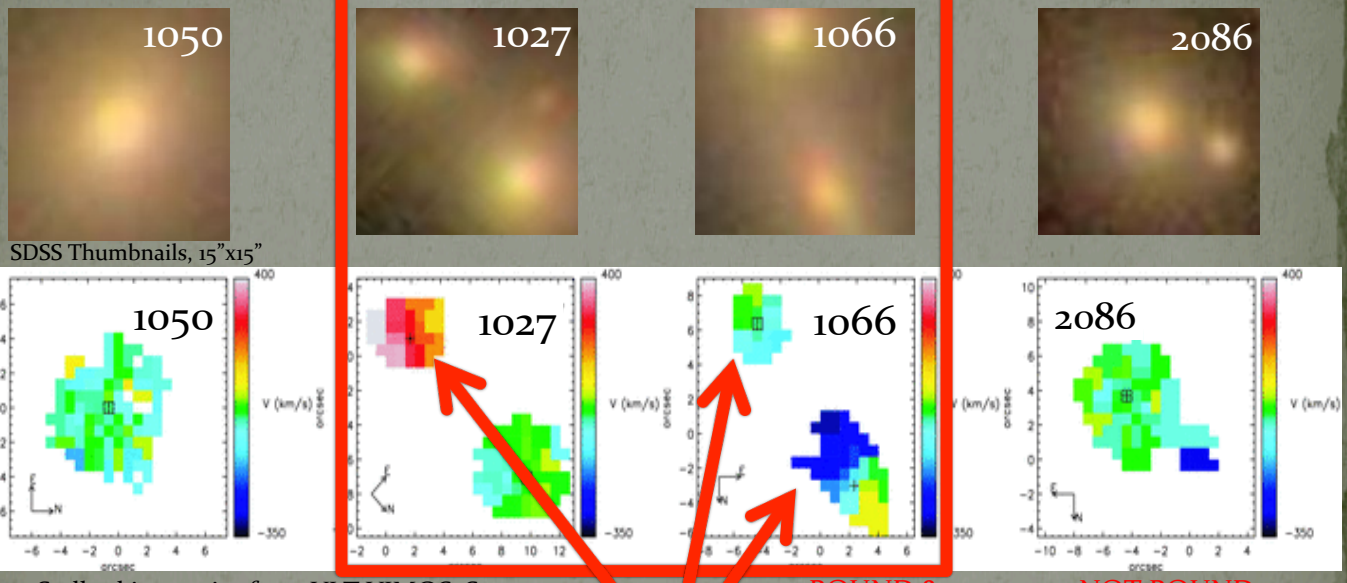
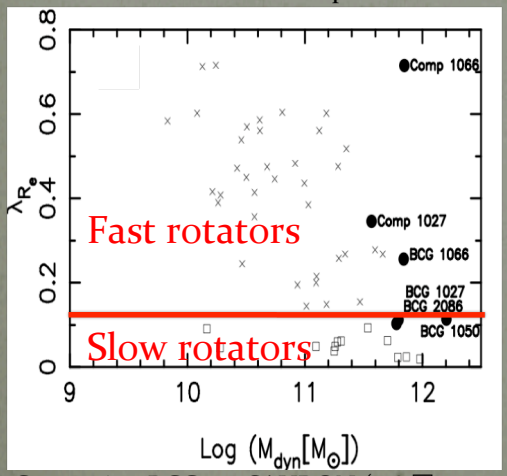
Brightest Cluster Galaxies (BCGs) include the most massive galaxies in the Universe and are predicted to undergo more merging than less massive galaxies. However, the observational evidence for recent BCG growth via merging is contradictory. BCGs should also have relatively low angular momentum due to their rich merger histories, but this remains unclear.

To address these questions, we present IFU spectroscopy of 4 BCGs at z~0.1 from SDSS (Brough +11). Three of the BCGs have companions within 20 kpc and one has no nearby companion. By targeting very massive galaxies, we extend the mass range analysed in the existing SAURON and ATLAS3D surveys.



SDSS Thumbnails, 15"x15"

Stellar kinematics from VLT VIMOS. Squares mar
BCGs and crosses mark companions. The kinematics
indicate the rotating galaxies and enable us to
determine whether the companions are bound.



Comparing BCGs to SAURON (x &□; Emsellem+07). The BCGs extend IFU stellar kinematic analyses to higher masses. The companions & 1 BCG have higher angular momentum than expected for their mass

CONCLUSIONS

- Kinematic evidence that some BCGs continue to grow via major dissipationless merging even at z~0.
- For BCGs to continue to undergo mergers and be consistent with studies that find no evolution in BCG stellar masses since z~0 (Whiley+08; Stott+10) suggests that most of the stellar mass from late merging populates the Intra-Cluster Light.
- Not all massive galaxies have low angular momentum: one of the BCGs as well as both massive companions are fast rotators.

Brough et al., MNRAS, 2011, 414, 80