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The methodology of extracting kinemtaical properties and mass profiles from BCGs.

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Abstract content
   (Max 300 words)
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Brightest cluster galaxies (BCGs) constitute a very unique class of early-type galaxies. This is highlighted, amongst others, by their extremely high luminosities, extended envelopes and special locations in galactic clusters. To date, however, there is no global theoretical consensus on their formation mechanisms. Another difficulty arises in trying to explain the rising velocity dispersion profile of a subsample of BCGs above a transitioning redshift. One interpretation for this feature is that for larger radii, a strong rising mass-to-light ratio comes into play. In other words, dark matter becomes a more important contributing factor to the dynamical mass of the BCG. A second possible interpretation is has been ascribed to increasingly tangential stellar orbits at larger radii. One main question becomes whether the rising velocity dispersion reflects the gravitational potential of the BCG, or whether it is a snapshot of a dynamical system that has not reached equilibrium.
Due to lack of theoretical consensus, BCG studies studies are dominantly driven by observational studies. In this presentation, a pedagogic approach is taken in explaining how important kinematical properties and mass profiles can be obtained from BCGs. Emphasis is placed on how the line of sight velocity distribution (LOSVD) and velocity dispersion profile follows from spectroscopic measurements. Surface photometry will be elaborated on when explaining how it is used to constrain stellar mass estimates of BCGs in connection with spectral energy distribution fits. Furthermore, a method for constraining the dynamical mass of the BCG from velocity dispersion measurements will also be elaborated on.
Lastly, this presentation will conclude with how these newly derived quantities can be exploited for understanding the dynamics of BCGs. Prominent avenues of discussion include how the formation mechanisms of BCGs can be inferred from the available data and what the various mass density profiles really convey. Finally, an epilogue is given on how the current knowledge will be applied in a subsequent study that will investigate the properties of a sample of BCGs, as well as the particular goals that will be pursued.

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Would you like to <br> submit a short paper <br> for the Conference
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