Studying galaxies in the nearby Universe, using R and ggplot2
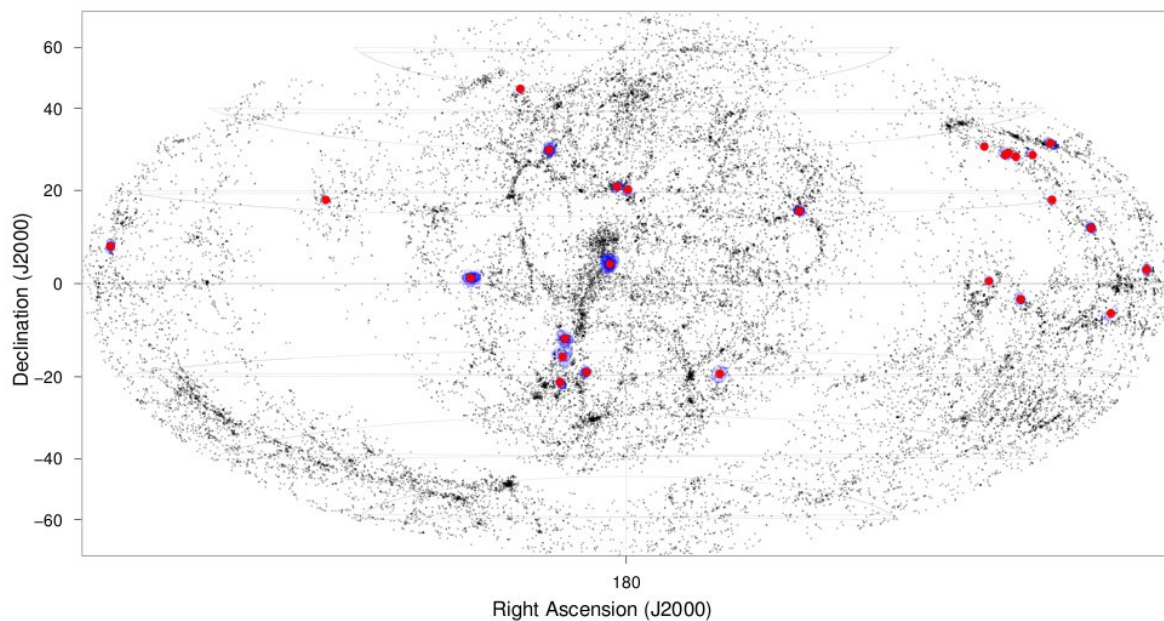
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Galaxies are cosmic building blocks whose properties tell us about the origins and fate of the Universe. These objects are drawn together under the influence of gravity to form a complex pattern of filaments, and at the intersection of these filaments lie groups and clusters of galaxies– the largest gravitationally bound structures in the Universe. Here, large concentrations of dark matter tightly hold the fast-moving galaxies together, enabling close interactions and mergers to take place, which transform their properties. The location, luminosity and morphology of $\sim 10^5$ galaxies in the local Universe represents a 5 dimensional multivariate dataset which is ideally suited to exploration with *R*, and **ggplot2** in particular. I will show how *R* is being used to develop new insights into our understanding of galaxy groups and the process of cosmic feedback in the Universe, based on results from the CLoGS (Complete Local-Volume [galaxy] Groups Sample[1]) project, using the HyperLeda[2] galaxy database.

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[1]`http://www.sr.bham.ac.uk/˜ejos/CLoGS.html`
[2]`http://leda.univ-lyon1.fr`