Quasar host galaxies and environments in the GAMA survey

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Abstract. We present first results from our study of the host galaxies and environments of quasars in Galaxy And Mass Assembly (GAMA), a multiwavelength photometric and spectroscopic survey for $\sim$300,000 galaxies over $\sim$300 deg^2, to a limiting magnitude of r $\sim$ 20 mag. We use a GAIA-selected sample of $\sim$350 quasars at z < 0.3 in GAMA. For all the quasars, we determine all surrounding GAMA galaxies and measure their star formation (SF) rate and SF history, and the host galaxy morphology and group membership of the quasars. As a comparison sample of inactive galaxies, we use 1000 subsets of galaxies in GAMA, matched in redshift and galaxy stellar mass to the quasars. We find that quasar activity does not depend on the large-scale environment (cluster/group/void), although quasars tend to prefer satellite location in their environment. Compared to inactive galaxies, quasars are preferentially hosted in bulge-dominated galaxies and have higher SF rates, both overall and averaged over the last 10 and 100 Myr. Quasars also have shorter median SF timescales, shorter median time since the last SF burst, and higher metallicity than inactive galaxies. We discuss these results in terms of triggering mechanisms of the quasar activity and the role of quasars in galaxy evolution.

Keywords. galaxies: active, galaxies: quasars, galaxies: star formation, galaxies: environments