

## RECENT STAR FORMATION AND NUCLEAR ACTIVITY OF LOW REDSHIFT QUASARS

J. Kotilainen<sup>1,2</sup>, D. Bettoni<sup>3</sup>, R. Falomo<sup>3</sup> and K. Karhunen<sup>2</sup>

<sup>1</sup>Finnish Center for Astronomy with ESO (FINCA), University of Turku, Finland

<sup>2</sup>Tuorla Observatory, Department of Physics and Astronomy, University of Turku, Finland

<sup>3</sup>INAF - Observatory, University of Padova, Italy

email: jarkot@utu.fi

We present our ongoing study to investigate the link between the nuclear activity of quasars (with supermassive black holes) and recent star formation in their host galaxies. To this aim we selected a sample of 20 low redshift ( $z < 0.3$ ) quasars from a parent sample of  $\sim 400$   $z < 0.5$  quasars, derived from the Sloan Digital Sky Survey (SDSS) Stripe 82 area, for which both host galaxies and environment was recently investigated by us in detail (Kotilainen et al. 2013; Falomo et al. 2014; Karhunen et al. 2014; Bettoni et al. 2015). All the targets are well resolved and for majority of them there is at least one nearby galaxy that could be associated with the QSO at a projected distance less than 50 kpc. We have obtained deep optical spectroscopy of the quasar host galaxies and of their nearest companions (when available) with the Nordic Optical Telescope (NOT) and ALFOSC instrument. The data quality is excellent and the redshift of the close companion, in most of the cases, confirms its physical association with the quasar. We are currently searching for spectral signatures of recent star formation in the host galaxy and their companion galaxies. This is done from the measurement of excitation lines (e.g.  $H\alpha$ ,  $H\beta$ , [OIII]4959+5007) and absorption lines (e.g. Ca break 3933+3969, G band 4303, Mgb 5174), fit with stellar synthesis models. From these measurements, we can estimate star formation rates, ages of stellar populations, and metallicities. Overall, we shall assess the relationship between recent star formation induced by gas-rich mergers and interactions and the triggering of nuclear activity in quasars.