SCATTERED LIGHT IN A DISTANT RADIO GALAXY

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Abstract. We present optical polarimetric observations of a radio galaxy at z=2.63 and the results of its spectral modelling made by using stellar and scattered anisotropic nuclear radiation.

1. Polarimetric observations

High redshift radio galaxies (HZRG) [2] provide a unique possibility to study galaxies at early cosmological epochs. An accurate separation of the stellar and non-stellar components is necessary to infer the evolutionary status of these galaxies. In order to derive the ratio between the stellar and the non-stellar radiation we have observed a very distant radio galaxy by CCD imaging polarimetry.
Polarimetric observations of the radio galaxy MRC2025-218 were made at 9 different position angles in R band (λ_{rest} ~1900 Å) at the ESO/MPG 2.2m and ESO 3.6m telescopes. We detect high linear polarization (P=8.3±2.3%, θ=93°±8°) with the **E**-vector perpendicular to the radio-optical axis. The polarization properties are consistent with the ones of radio galaxies at 0.5<z<1.2 [1]. The presence of high polarization indicates that the UV radiation is not purely stellar and that a realistic modelling of the spectral energy distribution (SED) must include both stellar and non-stellar radiation.

2. Spectral and polarization modelling

The high perpendicular polarization suggests that the UV radiation is due to scattering of anisotropic nuclear radiation rather than to a jet-induced starburst phenomenon [1]. We have successfully fitted both the degree of polarization and the SED between 1000-6000 Å by using two components : an evolved host galaxy (age ~2 Gyr) and a dust (Galactic grains) scattered quasar spectrum (scattering angle 45°). According to this model, all the UV radiation is due to scattering of the light coming from the obscured quasar nucleus. Our result is consistent with the radio loud quasars – radio galaxies unifying scheme.

References

1. Cimatti A., di Serego Alighieri S., Fosbury R., Salvati M., Taylor D., 1993, *MNRAS*, 264, 421.
2. McCarthy P.J. 1993 *ARAA*, in press

T. J.-L. Courvoisier and A. Blecha: Multi-Wavelength Continuum Emission of AGN, 468.