POLARIZED OPTICAL AND INFRARED EMISSION FROM HIGH REDSHIFT RADIO GALAXIES

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We have detected highly polarized ($> 5\%$) optical and/or infrared emission (rest frame UV to near infrared) from 5 of the 8 high redshift radio galaxies (HZRG; $z > 0.7$) we have observed. There are now a total of 9 (out of 12 observed) HZRG known to be polarized in spatially integrated measurements (cf. [1]). We have made images of the extended polarized emission from two radio galaxies (3C 265 and 3C 256). Detection of extended polarized emission from a HZRG has previously been reported for 3C 368 [6]. All of the existing polarization observations support the hypothesis [2] that the "alignment effect" (the tendency of the extended UV light to be aligned with the extended radio emission, e.g. [4]) is not solely produced by a burst of star formation, but contains a very significant component produced by the scattering of the light from a hidden active galactic nucleus (AGN). Our modeling of the frequency dependence of the polarized flux from 3C 265 suggests that the most probable scatterer is dust.

Another example of a high redshift object that appears to contain a hidden AGN is the z=2.286 "proto" galaxy/AGN IRAS F10214+4724, one of the bolometrically most luminous objects known [5]. Our spectro-polarimetry confirms the detection by Lawrence *et al.* [3] of highly polarized emission (17%) and reveals that the rest frame UV narrow emission lines are polarized to the same high degree as the continuum. This suggests that the scatterers are cool, i.e. dust. The observed SED of the polarized emission has a slope of -0.9 in $\log(F_\nu)$ vs. $\log(\nu)$. From this we infer an incident radiation spectrum with a slope between -0.9 to -3, considerably different from what would be expected from a young star burst, but similar to some AGNs.

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