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Co-ordinated Multi-wavelength Observations of the RS CVn System CF Tuc

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Abstract: A 'multi-site, multi-wavelength' campaign on the eclipsing RS CVn binary CF Tuc was carried out in 1996 over both optical (photometry and spectroscopy) and radio (microwave) ranges. The microwave data was taken with the Australia Telescope Compact Array (ATCA). It covered slightly more than one complete orbital cycle at 4.8 and 8.64 GHz in one continuous run. There was also coverage of about 25% of the light curve at 1.38 and 2.38 GHz. High dispersion spectroscopy was obtained using the McLellan 1m telescope and échelle spectrograph at Mt John University Observatory (New Zealand). Supporting photometry came from various smaller-scale facilities in New Zealand. The data show an anti-correlation between microwave signal enhancement and photometric flux diminution (maculation effect), noted before in such studies. The spectroscopy confirms the effects being related to a very enhanced active region on the secondary star located close to the maculation region. Cross-correlation of the 4.8 and 8.64 GHz data reveals a tendency for effects at the former frequency to lag those at the higher frequency, typically by about half an hour. This points to travelling wave effects in the corona of the active K4-type component. More observations like these will be required in the future to probe these effects more fully.

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