cantly different from 1·5. For *CP* 0834 the index is steeper than 1·7. Because of the variability of the sources, there is some inherent uncertainty in these figures which assume the 11 cm results and the previous longer wavelength results[3] are representative. It seems likely, however, that the steep spectral index of *CP* 1919 is by no means typical of all pulsed radio sources, and there may indeed be a considerable range of spectral indices including ones flatter than 1·5. Searches at long wavelengths are biased in favour of sources with steep spectral index, and it is possible that some pulsed sources may be more amenable to detection at short wavelengths, as is the case with some known steady radio sources.

It is interesting to note that with the sensitivity reported at 13 cm wavelength[5], individual pulses from *CP* 1133 may just be detectable. This would be particularly interesting as a test of possible mechanisms for producing the fluctuations characteristic of pulsed radio sources at longer wavelengths.

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Interstellar Magnetic Field

SMITH[1] has given an upper limit to the interstellar magnetic field in the direction of the pulsating radio source *CP* 0950 derived from measurements of its Faraday rotation. This limit, $< 2 \times 10^{-7}$ gauss for a component directed towards the Earth, is, as Smith points out, much less than other existing estimates. Furthermore, it is significant that the contribution to the total rotation from the Earth's ionosphere implied by this limit is considerably lower than one would expect for the local time of the observations. In this communication we suggest that the observations as described are compatible with an interstellar field component of about 10^{-6} gauss directed towards the source and with a larger rotation contribution from the ionosphere.

It is likely that the critical frequency (f_0F2) on the ray path at the time of the observations ($\sim 20^h$ UT April 3, 1968) was about 7·6 MHz (private communication from T. R. Hartz). This, combined with a probable *F*-region equivalent thickness of 305 km (ref. 2), suggests a total electron content of about 22×10^{12} cm^{-2}. At an elevation of 45° on the meridian at Jodrell Bank, one would expect about 12 radians of ionospheric Faraday rotation at 150 MHz.

Evidence that the interstellar field is directed towards *CP* 0950 ($l = 229°$, $b = 43°$) and is therefore oppositely directed to the geomagnetic field over Jodrell Bank is available from measurements of the rotation measure (RM) of polarized radiation from the radio galaxy 3*C* 227 ($l = 229°$, $b = 42°$). This is given by Morris and Berge[3] as RM $= -6 \pm 3$ radians m^{-2} and by Gardner and Davies[4] as RM $= -7 \pm 3$ radians m^{-2}. From these data we estimate that for *CP* 0950 at a distance of ~ 30 pc (ref. 5) the expected rotation measure will be $-6{\cdot}5 \times \frac{30}{140} = -1{\cdot}4$ radian m^{-2}, where we have assumed the path in the galactic disk in which Faraday rotation takes place for 3*C* 227 as 140 pc. This implies an interstellar Faraday rotation at 150 MHz of $-5{\cdot}6 \pm 1{\cdot}8$ radians for *CP* 0950.

It seems reasonable to conclude that the total rotation of $+4$ radians observed by Smith could be made up of $+12$ radians in the ionosphere and -8 radians in interstellar space. This interpretation is consistent with the observation[1] that the total rotation was in the same sense as the ionospheric contribution and implies an interstellar magnetic field four times larger than the upper limit set by Smith. Further measurements of the total Faraday rotation at a time of day when the ionospheric contribution is considerably smaller would be sufficient to decide which of the two interpretations is correct.

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Preliminary Results on Pulsating Radio Sources

A PROGRAMME of observations of the pulsating sources recently discovered by the Cambridge group has been started at 408 MHz with the N.–S. arm of the "Northern Cross" radio telescope. At present only this arm of the Cross can be used because the E.–W. arm is being reconditioned. Some of the results obtained, however, show that even these incomplete observations may be useful, because of the long transit time (4 min) in the antenna fan beam which allows the observation of hundreds of pulses at each transit and because of the multibeam arrangement which enables a rapid and precise determination of the declination of a source to be made. Indeed, by observing the source with the five beams of the instrument simultaneously—at these declinations each beam is 9 min of arc wide and spaced 4 min of arc from the next—it is possible, in principle, to obtain a value of δ even for a single recorded pulse. Because of the very great intensity variations of pulsating sources, this technique is advantageous as compared with the conventional technique of scanning across the source.

Up to now three sources—namely *CP* 0950, *CP* 1133 and *CP* 1919—have been observed, each during several transits. *CP* 0834 has not yet been observed; we do not know whether this is only because the published position is too widely different from the true one.

The following values have been obtained:

$$CP\ 0950\ \delta = 08°\ 11'{\cdot}1 \pm 0{\cdot}7'\ (1950)$$
$$CP\ 1919\ \delta = 21°\ 47'{\cdot}2 \pm 0{\cdot}7'\ (1950)$$
$$CP\ 1133\ \delta = 16°\ 08'{\cdot}0 \pm 0{\cdot}7'\ (1950)$$

The first two values agree very well with the corresponding values obtained at Cambridge with the one-mile radio telescope of $\delta = 08°\ 10' \pm 1'$ and $\delta = 21°\ 47'\ 02'' \pm 10''$, respectively. These values seem to confirm the statement made by Bailey and Mackay[1] that no prominent optical object can be seen within the error field of *CP* 0950.

A significant difference is apparent between the behaviour of *CP* 1919 and that of *CP* 1133 and *CP* 0950 as far as the pulse height in a train of pulses is concerned.