

76GHzレーダーによる野辺山45m電 波望遠鏡への干渉評価実施の根 拠

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CPM文書CHAPTER 4:

Space science services and radio astronomy

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4.1.2.1.1 Sharing between the RAS and terrestrial services

Active terrestrial services allocated above 71 GHz include the FS, MS, AS, RLS, RNS and BS. **No sharing studies between the RAS and these services have been performed yet within the ITU, because few or no parameters are available to characterize the services with which sharing needs to be assessed in this spectral region.** Sharing between terrestrial services and ground-based radio astronomy is considered feasible, however, because of the limited number of existing and planned radio astronomy stations worldwide, and their remote location (Recommendation ITU-R RA.1272), Administrations may establish coordination zones around millimetre-wave astronomical observatories. Coordination radii of the order of 100 km may be necessary. Assuming, for example an absorption coefficient of 0.5 dB/km, spreading and propagation losses over a distance of 100 km amount to about 150 dB. The power flux-density due to a 1 kW omnidirectional transmitter at a distance of 100 km is then typically -120 dB(W/m²). Detrimental power flux-densities for continuum radio observations in astronomy bands above 71 GHz listed in Recommendation ITU-R RA.769-1, Table 1, range from -125 dB(W/m²) at 89 GHz to -113 dB(W/m²) at 270 GHz. For spectral line observations, Table 2 of the same Recommendation gives values ranging from -144 dB(W/m²) at 88.6 GHz to -131 dB(W/m²) at 265 GHz. Taking advantage of terrain shielding, already done at some operating millimetre-wave observatories, may reduce the size of the required coordination zone. Recommendation ITU-R RA.1272 notes the need for further studies of the size of the coordination zone.

Because of the relatively small area of the coordination regions required, the RAS should be able to share with terrestrial services with minimum impact, by means of geographical sharing, time-sharing, or both. Geographical and/or time-sharing should be possible between the RAS and the fixed, mobile, amateur and radiolocation services. The possible exception is the broadcasting service, with which sharing may be difficult or may require large coordination radii because of the high power levels employed by this service. Given that new allocations to the RAS are intended to be used at only a few remote locations worldwide, the RAS could accept a footnote, limiting additional allocations to be shared with terrestrial services, to coordination zones around observatories.

- 前述文書の記述にもかかわらず、その後も干渉検討が実施されなかった。国立天文台にとって今回76 GHzレーダーの作業班が初めて干渉検討を実施するチャンスであった。これは第一回の作業版での私の発言の意図である。