

Interactive comment on “VHF antenna pattern characterization by the observation of meteor head echoes” by Toralf Renkowitz et al.

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This paper presents an interesting new technique based on the occurrence frequency of meteor head echoes for monitoring the antenna pattern of the MAARSY radar. While the proposed technique seems to provide accurate estimates of the main beam direction as well as its shape, the following issue should be solved before the paper is accepted for publication:

Major comment: The authors recognize that the proposed method gives a large underestimate of the level of the first sidelobe by about 5dB. While they seem to consider it as a minor problem, the reviewer does not agree this point of view. For a large array antenna such as that of the MAARSY radar, random errors in individual elements seldom affect the direction or shape of the antenna main beam, because their effect

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appears as a linear superposition of a random pattern to the designed pattern. Small errors do affect the level of low-level sidelobes first as their magnitude increases. So it is very important to monitor the level of the first sidelobe in order to detect a serious increase in random errors that may cause a major distortion on the main lobe.

As the authors state, Chau et al. (2014) successfully determined the antenna pattern of the MAARSY radar using meteor head echo intensities down to the level of the first sidelobe with an accuracy of about 1dB. While the reviewer agrees with the authors' claim that it is advantageous to only use the occurrence frequency of the meteor head echoes, they need to establish a means to correct the underestimate existing in the proposed method by comparing their method with that employed by Chau et al. (2014). The correction curve derived by such comparisons should serve as a universal tool to compensate for the underestimate.

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