

Interactive comment on “A Gaussian Mixture Method for Specific Differential Phase Retrieval at X-band Frequency” by Guang Wen et al.

Anonymous Referee #1

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I have carefully, and with interest, read the manuscript. The paper addresses estimation of the Kdp based on the measurements of the differential phase shift in X-band polarimetric radars. The authors use data from the University of Missouri X-band radar.

Overall, I find the paper to be technically sound and worth publishing. The key comments are:

Readers would benefit from a more tutorial style as the topic is highly specialized. This regards both the Kdp estimation in general as well as the Gaussian mixture statistical modeling.

I think, that it is important to point out that Kdp is calculated from a filtered (estimated) differential phase and not directly from its moment-based measurements. To distin-

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guish the three, one may use ψ , f_i , k symbols.

The authors should emphasize that the main advantage of their proposed method is in providing the estimation variance for the K_{dp} and not is providing better estimates of K_{dp} . This is evident in the long-term evaluation using rain gauge data.

I suggest that the authors improve the quality of the figures: some lettering is not legible, the inter-panel space could be reduced, etc.

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