

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 , ϕ , k symbols.

The authors should emphasize that the main advantage of their proposed method is in providing the estimation variance for the Kdp and not in providing better estimates of Kdp. 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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