On behalf of all coauthors, we would like to thank the reviewer for the valuable comments on the manuscript. Below we address all the comments. Reviewer's comments are shown in blue color, while our responses are in black.

Reviewer 2:

Comment: The authors select radar returns with strong SNRs (section 3.1) produced by significant rain. The range of radar observations can be longer than 1 km. An estimation of differential attenuation in rain would be desirable in analyzing the dual-pol variables. Differential attenuation decreases measured ZDR and δ values that could cause the decrease in these variables in Fig. 9.

Response: Thank you for your detailed comment. We have addressed each point separately below:

1. **Study Objective:** We would like to clarify that the primary aim of our study is not to build a retrieval or derive properties of rain. Instead, our goal is to select "ideal" spectra for analysis. We have collected several datasets and established a set of rules for selecting these "ideal" spectra, as described in Section 3. Therefore, there is no need to use data from distances greater than 1 km in this study.
2. **Differential Attenuation Estimation:** Estimating differential attenuation in rain is more straightforward for cloud radars compared to centimeter-wavelength radars. For cloud radars, we can use polarimetric spectra to separate backscattering and propagation effects. This separation approach is detailed in Section 3.3 of our paper, "AMT - Evaluation of the Reflectivity Calibration of W-band Radars Based on Observations in Rain." Additionally, the study "Exploring Millimeter-Wavelength Radar Capabilities for Raindrop Size Distribution Retrieval: Estimating Mass-Weighted Mean Diameter from the Differential Backscatter Phase" (Journal of Atmospheric and Oceanic Technology, Volume 41, Issue 6, 2024) covers spectra-based separation. Since these topics are already addressed in these publications, we have briefly discussed the separation in Section 3.2 of the current manuscript.
3. **Propagation Effects:** We agree that propagation effects can alter observed variables, such as ZDR and delta. However, we would like to emphasize that for cloud radars, we can separate propagation and backscattering effects using polarimetric spectra, as discussed in the aforementioned studies. We have applied these separation techniques to derive ZDR and delta values that are unaffected by propagation effects, as explained in Section 3.2 of the current manuscript. Consequently, Figure 9 presents results that have been corrected for propagation effects. We added the following text to the end of the Section 3.2: "We emphasize that propagation and hardware effects influence all spectral components uniformly within a given set of polarimetric spectra. These effects are accounted for in the biases b_{dr} and b_{ϕ}. Consequently, the estimates $z_{dr}(v_k)$ and $\delta(v_k)$ remain unaffected by these effects."

Comment: To my knowledge, the radar has an antenna radome. The radar measurements were taken in rain when the radome was wet. Water on radome affects dual-polarization measurements. If the authors have data on differential attenuation caused by a wet radome, they should be included in the manuscript.

Response: We agree, the problem of wet radomes is a crucial topic for precise polarimetric measurements. The used radar has an active rain mitigation system consisting of a hydrophobic material of radomes and a strong blower creating a narrow flow of air over the radome surface to blow water away. In addition, any issues with polarimetric calibration which may occur e.g. due to receiver drifts, affect all spectral components (small spherical drops and large drops responsible for ZDR and delta) in the same way. Therefore, the separation technique discussed in the previous response (and also in the Section 3.2 of the manuscript) allows us to estimate ZDR and delta unaffected by calibration issues. This is explained in the Section 3.2. We added the following text to the end of the Section 3.2: "We emphasize that propagation and hardware effects influence all spectral components uniformly within a given set of polarimetric spectra. These effects are accounted for in the biases b_{dr} and b_{ϕ}. Consequently, the estimates $z_{dr}(v_k)$ and $\delta(v_k)$ remain unaffected by these effects."

Comment: The authors compare radar data with data obtained from the Thies disdrometer located within 10 m of the radar (p. 5, Ln. 144). At a slant distance of radar observation of 1000 m (Table 2) and 30 deg of antenna elevation, the height of radar resolution volume is 500 m above the radar position and about 860 m in the horizontal direction. That is, an assumption of the uniformity of rain at those distances is made. Justification is needed.

Response: Please note that disdrometer data serve two purposes in this study. First, they are used to constrain the size-velocity relations of raindrops in Section 4. For this purpose, we use disdrometer data that are neither collocated with the radar nor cover the same time periods (see Section 2.2). The rationale is that size-velocity relations are expected to be consistent regardless of the location and time of measurement. We focus on characterizing drops on average rather than analyzing them at specific moments. The effect of air density, which depends on atmospheric pressure, is taken into account.

Second, collocated disdrometer data (see Section 2.3) are used to evaluate radar reflectivity in Section 6.3 of the updated manuscript. In this case, the distance between the radar range bin and the disdrometer is 300 m. We follow the calibration approach detailed in Section 4 of AMT - Evaluation of the reflectivity calibration of W-band radars based on observations in rain. The effects of evaporation and time lags are considered. The narrow distribution of results (within +/-1 dB) indicates that horizontal and vertical displacements have no significant impact. We added the following text to the section 6.3. of the updated manuscript "The narrow distribution of the results suggests that any potential effects from the horizontal displacement of the radar's range bin and the disdrometer fall within the method's uncertainty."

Comment: The authors indicate that their constraints are meant to avoid turbulent areas (section 3). Rain frequently suppresses turbulence, but the horizontal wind shear can be significant. The effectiveness of raindrops as wind tracers depends on their sizes. The horizontal wind shear reshuffles raindrops and its impact on radar spectra can be significant. Therefore, information on possible wind shears would be informative. Such information can be obtained from the collected radar data by analyzing the Doppler velocity along the radials.

Response: We would like to clarify that the set of rules introduced in Section 3 for selecting spectra were specifically designed to exclude those affected by turbulence, regardless of its source. The reviewer's comment is not entirely clear to us. Our study does not aim to characterize all spectra; instead, we focus on selecting and processing only "ideal" spectra that have minimal or no turbulence effects.

Comment: I am curious why eq. (3) has the tanh(.) functions? Is there any reason for that? The curve in Fig 6a is quite smooth to be approximated with a simple polynomial function as it is typically done.

Response: The choice of approximation approach is always a matter of preference. As mentioned in Section 4.1, we use the hyperbolic tangent function primarily because it offers sufficient flexibility to fit the size-velocity relations with just three parameters, and it ensures that the approximation is monotonic, which is not always the case with polynomials. While other approximation methods could also fit the data, they would not change the results. We have provided the coefficients and the parameterization in Equation 3, allowing readers to easily use the results.