

# ***Interactive comment on “Monitoring the differential reflectivity and receiver calibration for the German polarimetric weather radar network”***

## **by Michael Frech and John Hubbert**

**Michael Frech and John Hubbert**

[michael.frech@dwd.de](mailto:michael.frech@dwd.de)

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We thank the reviewer for his helpful and constructive comments.

With respect to additional technical information: we refer to the Frech et al. 2013 where details of the DWD radar system (including the antenna assembly) are introduced.

With respect to the question on the findings in Hubbert (2017):

Hubbert (2017) also showed a Zdr bias that depended on the temperature of the antenna assembly. This physically designates everything to the right of the reference plane in Fig. (1). For S-Pol this encompasses the waveguide out of a sea container, up

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through the rotary joints, and then along the dish support struts and to the feed horn and the parabolic reflector. The part of the antenna assembly and the exact physical cause of the Zdr bias variation is still unknown but is under investigation. For S-Pol an extensive antenna modeling study is being pursued. Since there are no active electronic components in the antenna assemble, it would seem then that the expansion and contraction of the parabolic reflector and the support struts are the most likely causes of the Zdr bias variability. The DWD antenna assembly is much the same. For S-Pol we have found that the Zdr bias as a function of temperature is not linear and it is also a function of frequency (see Hubbert 2017).

Changes in the manuscript according to the technical comments by the reviewer:

We have taken care of all the typos and obvious errors as indicated by the reviewer:

Some specific changes to the manuscript and comments:

page 3, line 34: If you add up the radar operation time of all 17 operational radars that are analyzed here you come up with 87 years of radar operation time.

page 5, line 13: range bins of the birdbath scan have a length of 25 m

page 9, line 17: It is not the intention to provide an alternative method to determine antenna gain (so you are correct that this is not a true gain estimate, which is also stated in the paper, see p. 9, l 17 of the submitted manuscript). But the retrieved gain using e.g. observed solar flux at C-band serves, as shown here, is a good estimate of the antenna provided by the antenna manufacturer. The advantage to use the retrieved gain as compared to retrieved solar flux units (as it is commonly done in literature) is stated in this section of the paper.

page 12 figures: Where timeseries are shown we now indicate that time is in UTC.

page 24, l4: footnote is now in the text

We now use Eq. (X) throughout the text.

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