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Atmospheric Measurement Techniques Discussions

Interactive comment on "Data inversion methods to determine sub-3 nm aerosol size distributions using the Particle Size Magnifier" *by* Runlong Cai et al.

Anonymous Referee #2

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The authors present four different data inversion methods for analyzing the experimental data obtained by the particle size magnifier (PSM). According to this study, the expectation-maximization (EM) algorithm shows the best agreement for the tested generated and simulated aerosol size distribution. Recommendations for reducing the measurement uncertainties like software/hardware improvements or change the scanning scheme of the saturator flow rate was suggested. The manuscript addresses an important topic and presents interesting results which especially can help for a better understanding of atmospheric new particle formation. The reviewer recommends the publication of this manuscript after some minor and technical corrections which are listed below.

Minor Comments:
The Reviewer is wondering how the different studied inversion algorithm will perform when the particle number concentration of the observed aerosol is strongly decreased like it is under atmospheric conditions? Have any considerations been made concerning the application onto atmospheric conditions?

Technical Corrections:
p.1, l.14 using diethylene glycol as "the" working fluid – remove "the"
p.6, l.22 eq. 6 - the uppercase subscriptions are not fully visible
p.7, l.4 eq. 8 J ? I – please check equation
p.7, l.10 eq. 9 - the uppercase subscriptions are not fully visible
p.7, l.11 the uppercase subscriptions are not fully visible
p.7, l.16 eq. 10 - the uppercase subscriptions are not fully visible
p.15, l.13 sable – stable
p.23, l.1 Figure 4 is full of information – Consider to increase the figure size or add an table with the stated concentrations.

Interactive comment on Atmos. Meas. Tech. Discuss., doi:10.5194/amt-2018-35, 2018.