

Interactive comment on “On the time-averaging of ultrafine particle number size spectra in vehicular plumes” by X. Yao et al.

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Received and published: 18 September 2006

In this paper, the authors report on new high time-resolution road measurements of particle size distributions using a state-of-the-art fast-response electrical mobility spectrometer, namely the Engine Exhaust Particle Sizer (EEPS).

Fast-response mobility spectrometers similar to the EEPS have been proposed in the literature. These include the Electrical Aerosol Spectrometer (EAS) developed at Tartu University (Tamm et al 2002), and the Differential Mobility Spectrometer (DMS) developed at Cambridge University (Biskos et al. 2005). In fact, both the EEPS and the DMS can be considered as ancestors of the EAS. (Note that the EAS has been announced and used in field studies well before 2002) The main differences among these instruments are the particle size range they can measure, and the resolution of their

individual channels. Because the design and time-resolution of the three instruments are very similar, averaging problems similar to those reported in this paper could be encountered in the EAS and DMS measurements. I believe, therefore, that the authors should include reference to the above mentioned fast-response mobility spectrometers in their introduction. Actually, the reference that gives the description of the DMS (Biskos et al. 2005) is included in the bibliography, but I couldn't spot any point in the text where reference is made to the instrument.

The authors mention in the experimental section that an ELPI was also available on the mobile platform. A comparison between the ELPI and the EEPs data would be very interesting if available.

References

Tammet, H., Mire, A., and Tamm, E. (2002). Electrical Aerosol Spectrometer of Tartu University, *Atmos. Res.* 62:315-324.

Biskos, G., Reavell, K., and Collings, N. (2005). Description and theoretical analysis of a Differential Mobility Spectrometer. *Aerosol. Sci. Technol.*, 39, 527-541.

Interactive comment on *Atmos. Chem. Phys. Discuss.*, 6, 6825, 2006.

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