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Atmospheric Measurement Techniques Discussions

# *Interactive comment on* "Light scattering at small angles by atmospheric irregular particles: modelling and laboratory measurements" *by* T. Lurton et al.

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General comments.

The idea seems interesting, however it doesn't have sufficient theoretical foundation. If the Mie modes in a rough particle are added incoherently, they should still be defined for the same definite size x. That is, the roughness must be small, so that one can put the same Mie coefficients: a_n(x+delta_x)=a_n(x) and b_n(x+delta_x)=b_n(x). At the same time, the sand particles don't look like rough particles at all: they are notably non-spherical. This is not the range of applicability of the theory, that's why the coincidence



of the theory and the experiment looks embarrassing.

Specific comments.

Authors do not specify the polarization state of the beam in the experiment. As one can guess through Eq.(7), the formula for unpolarized light is used. As the laser beam is used in the experiment, the beam is definitely polarized. It would be better, if the authors specified the polarization state of the initial beam, and therefore, what value they measured: |S1|ˆ2 or |S2|ˆ2?

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