

Interactive comment on “High temporal resolution estimates of columnar aerosol microphysical parameters from spectrum of aerosol optical depth by Linear Estimation: application to long-term AERONET and Star-photometry measurements” by D. Pérez-Ramírez et al.

Anonymous Referee #3

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The paper devoted to application of Linear Estimation technique to retrieval of aerosol size distribution parameters from spectral aerosol optical depth measurements. Presented in the paper analysis and results of validation are comprehensive and convincing. Described method opens new possibilities of aerosol characterization from AERONET direct sun- and star-photometer measurements.

As it follows from the paper, to retrieve aerosol size distribution parameters using LE
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technique, the kernel matrix K is necessary. This matrix depends on particles radius and complex refractive index. It is not clear from the paper how algorithm deals with the complex refractive index. In this content authors write: “No significant dependencies on particle refractive index are expected . . . when using inversion algorithm that use only AODs as input data”. I can’t agree with this statement especially taken into account that, as it is written in the manuscript, real part in the algorithm is allowed to vary from 1.35 to 1.65 and imaginary: from 0 to 0.015. In this case essential variation of the complex refractive index will give variation of extinction cross section and thus effect the size distribution parameters. Authors should address this question in more details.

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