# POINTING ERROR AND FIELD OF VIEW OF AERONET CIMEL-318 SUN PHOTOMETERS

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The pointing error has been shown to play an important role in the retrieval of aerosol properties from Sun/sky ground-based radiometers (Torres et al., 2013). This is especially critical in the case of coarse mineral particles (desert dust). Two new measurements, namely *cross* and *matrix*, have been added to the Cimel 318 radiometer, which is the standard instrument of the Aerosol Robotic Network (AERONET). These are both designed for the evaluation of the pointing error, although the matrix scenario also allows measuring the solid view angle of the instrument. First we have developed a method to derive the pointing error based on the cross and matrix data, including a correction for the Sun movement during the measurement, which must be taken into account for a correct evaluation of the pointing error. Both measurements reach similar results, with differences under 0.01º in the estimated pointing errors. Second, the pointing error of AERONET field instruments has been monitored by means of the *cross* measurement, that has been added to the standard measurement sequence of 10 photometers belonging to AERONET-Europe (calibrated at any of the AERONET calibration centers in Europe, i.e. LOA-Lille or GOA-Valladolid). The pointing errors are generally smaller than 0.1º although in some instruments values up to 0.3º have been observed. Moreover, the pointing error evaluation has shown that this measure can be used to detect mechanical problems in the robots or dirtiness in the quadrant detector due to the stable behavior of the values, for example with respect to time and solar zenith angle. Third, the matrix scenario can be used to derive the solid view angle of the radiometers. For that a method was implemented and five instruments were characterized. In order to provide a validation to the field of view measurement, a comparison with the field of view obtained with the vicarious calibration method was developed. The differences between both methods, which are completely independent, are under 3%.