One Method to Optimize Inversion Algorithm of PM2.5

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Extract Gray Matrix from Echo Signal Diagram

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The *Clidar* all-weather system collects the side scatter signals of the laser and atmospheric particles in the open and closed state, obtains the CCD image, extracts the gray value matrix, and calculates the PM2.5 inversion model and the inversion value $I(i)$, fitting a linear relationship between the inversion value and the actual value. Through the standard error of the slope, the standard error of the intercept, the degree of fit, and the error rate of each inversion model in the relationship, the following conclusions can be drawn: the accuracy of the inversion model of the *Clidar* all-weather system in the closed state is higher; the $I(0)$ inversion model has the highest accuracy; the system can avoid the influence of ambient light on the traditional *Clidar* system, and is of great significance for all-weather real-time measurement.