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Experiments of an acousto-optic (AO) frequency shifter using dual AO crystals

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We are now developing an acousto-optic frequency shifter (AOFS) for the new high power Na temperature lidar. The time resolution of the lidar is possibly one minute that is ever made. The AOFS is capable of switching the frequency in the Na D2 line less than 1 microsecond. Two AO crystals are used to shift the input laser frequency (f_0) to f_0+df , and f_0-df . The all transmission of the AOFS without AO crystals is measured as %. The expected output/input power ratio of the shifter is 20% which is good enough for the operation. In the presentation, we show the final experimental results concerning the shifter.

Keywords: sodium lidar, frequency shifter, acousto-optic