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Construction of a low-cost LIDAR for cirrus cloud observations¹ BRITTNEY FERRIAN, KEVIN J BOYD, SYLKE BOYD, Unversity of Minnesota - Morris — Our physical understanding of the Earth's climate is critically linked to our quantitative understanding of cloud coverage and behavior. In particular, cirrus clouds are pivotal players in the radiation balance of the Earth. We have taken a route to capture the characteristics of cirrus clouds using an all-sky camera, and analyzing halo phenomena. That gives us a 2d distribution of the cloud. Neither altitude nor optical thickness can be determined from photographs alone. We are interested in combining altitude and thickness information with the brightness information gathered in images. That requires that the Lidar measures are taken at the time at which a halo photograph is taken. A simple LIDAR instrument with cheap and readily available components is being constructed for this purpose. We will present the layout of the instrument design, challenges in construction and weather-proofing and preliminary measurement results.

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