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Single-mirror, off-axis schlieren system's sensitivity determination

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Schlieren photography is a technique used to visualize density gradient of fluid medium, which is due to a linear relationship between fluid density and refractive indices. In this study, a single mirror off-axis schlieren system was employed to observe minimum temperature difference between room and heated object, vacuum flask.The tracker program was used in measuring relative light intensities. It was found that the minimum difference temperature observed was 0.9 ^{o}C.The theoretical minimum air density gradient is 0.128 kg/m^{4}, while the observed one is 2.98 kg/m^{4}. When using fluid dynamics computer simulation, the location where the light intensity data was acquired, the air density gradient was 0.0682 kg/m^{4}.

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