

Abstract Submitted
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Insect flight velocity measurement with a CW near-IR Scheimpflug lidar system. YIYUN LI, KAI WANG, Institute for Quantum Science and Engineering, Department of Physics and Astronomy, Texas A M University, RAFAEL QUINTERO-TORRES, Centro de Física Aplicada y Tecnología Avanzada, Universidad Nacional Autónoma de México, ROBERT BRICK, ALEXEI SOKOLOV, MARLAN SCULLY, Institute for Quantum Science and Engineering, Department of Physics and Astronomy, Texas A M University, IQSE TEAM — Flight velocity measurement has attracted a significant interest since it can aid insect identification and facilitate studies and monitoring of insect behavior. We propose a novel scheme for the 1-D flight velocity measurement of insects, based on a near-IR Scheimpflug lidar system we established at Texas A&M University. This new technique has been implemented and applied to study insects at the Salter Research Farm, Robertson County, Texas. The resolution property perpendicular to the probing direction of the Scheimpflug lidar system is explored and reveals the capability of retrieving the velocity component normal to the probing direction of insects passing through the field of view of our system. We observe a shift in wingbeat frequency, which indicates the presence of new insect species during the multi-day measurement. The study on 1-D flight velocity reveals a net directional movement of insects in the probing volume, providing supportive evidence of new species' arrival.

Yiyun Li
Institute for Quantum Science and Engineering, Department of Physics and Astronomy, Texas A
M University

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