

Using laser vibrometry to understand and exploit vibrational signals of insects

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Vibrational communication is one of the least understood modes of communication in insects, and laser vibrometry has already proven a valuable tool in research on this subject. Lasers are used for real-time monitoring and recording of signalling behaviour, with the advantage of not mechanically loading the surface. This is of crucial importance because of low intensities and rapid amplitude modulation, characteristic of insect vibrational signals. Plant-dwelling insects that use green plant tissues as a signal transmission medium comprise several economically important pests. From recent advances in understanding of communication between mates in some of those species, there emerged an idea of using artificially induced vibrations to disrupt pair-forming behaviour and therefore prevent mating in the field. This idea, which is currently being developed, has potential to substitute chemical methods of pest control with a more environment-friendly approach in certain settings, such as vineyards and greenhouses.

Key words: plant-dwelling insects, vibrational communication, transmission, mating disruption