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Physics in the Courtroom

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The principles, methods and technologies of physics can provide a powerful tool for the discovery of truth in the criminal justice system. Accordingly, physics based forensic evidence is relied upon in criminal prosecutions around the country every day. Infrared spectroscopy for the determination of the alcohol concentration of an individual's breath, force, momentum and multi-body dynamics for purposes of accident reconstruction and the basic application of sound metrological (measurement) practices constitute but a few examples. In many cases, a jury's determination of guilt or innocence, upon which the liberty of a Citizen rests, may in fact be determined by such evidence. Society may well place a high degree of confidence in the integrity of verdicts so obtained when "the physics" has been applied in a valid manner. Unfortunately, as concluded by the National Academy of Sciences, "The law's greatest dilemma in its heavy reliance on forensic evidence—concerns the question of whether—and to what extent—there is science in any given 'forensic science' discipline." Even where valid physical principles are relied upon, their improper application by forensic practitioners who have little physics training, background and/or understanding calls into question the validity of results or conclusions obtained. This presentation provides examples of the application of physics in the courtroom, where problems have been discovered and how they can be addressed by the physics community.