

Abstract Submitted  
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**Electric field measurements in a nanosecond pulse discharge by picosecond CARS / 4-wave mixing** BEN GOLDBERG, IVAN SHKURENKOV, IGOR ADAMOVICH, WALTER LEMPERS, The Ohio State University — Time-resolved electric field measurements in hydrogen by picosecond CARS / 4-wave mixing are presented. Measurements are carried out in a high voltage nanosecond pulse discharge in hydrogen in plane-to-plane geometry, at pressures of up to several hundred Torr, and with a time resolution of 0.2 ns. Absolute calibration of the diagnostics is done using a sub-breakdown high voltage pulse of 12kV/cm. A diffuse discharge is obtained by applying a peak high voltage pulse of 40 kV/cm between the electrodes. It is found that breakdown occurs at a lower field, 15-20 kV/cm, after which the field in the plasma is reduced rapidly due to plasma self shielding. The experimental results are compared with kinetic modeling calculations, showing good agreement between the measured and the predicted electric field.

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