

**DETERMINATION OF THE ION TEMPERATURE IN A  
HIGH-ENERGY-DENSITY PLASMA USING THE STARK EFFECT**

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We present experimental determination of the ion temperature in a neon-puff Z-pinch. The diagnostic method is based on the effect of ion coupling on the Stark lineshapes. It was found, in a profoundly explicit way, that at stagnation the ion thermal energy is small compared to the imploding-plasma kinetic energy, where most of the latter is converted to hydromotion. The method here described can be applied to other highly non-uniform and transient high-energy-density plasmas.