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Ion Temperature Measurements Behind a Normal Ionizing Shock Wave[1] CHAVIS RAYNOR, JOSEPH JOHNSON III, Laboratory for Modern Fluid Physics, Florida A&M University, Tallahassee, FL, NIRMOL PODDER, Troy University — It is generally accepted that thermodynamic properties like density, velocity, temperature, and pressure are important to our understanding of turbulent plasmas. It is also generally accepted that the understanding and manipulation of turbulent plasmas is paramount to the operation of a successful fusion device. Some of these thermodynamic properties can be measured directly, while others are derived indirectly. For example, the ion temperature in high temperature plasmas are usually either assumed to be equal to the electron temperature, or derived from equations that relate it to other thermodynamic properties of the plasma that can be directly measured. However, direct measurement of the ion temperature may provide deeper insight into the role of turbulent parameters. To investigate this, Doppler broadening of the H_β line profile behind a normal ionizing shock wave in a Hydrogen-Argon mixture is used. A comparison of these measurements with standard thermodynamic properties and turbulent parameters will be done.

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Chavis Raynor
Florida A&M University

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