

**Measurement of dielectric constant of a high speed moving object using resonant cavity perturbation technique**

**Abstract**

Measuring the mass of a high speed moving object of speed hundreds of m/s with higher accuracy is a challenging task. The techniques such as high speed imaging or impact sensing based technique are not much accurate. However, mass measurement of a projectile based on resonant cavity perturbation technique provides a more accurate and non-destructive solution in comparison to other technique.

This project work will focus on to design and develop instrumentation for an experimental setup using microwave cavity perturbation technique. The system will be tested for various millimeter sized plastic / Teflon bullets moving at a speed hundreds to thousands of m/s. The project work also includes application of analytical and modelling work as basis for microwave cavity development and further study.

**Duration:**10 Months

**References:**

1. Combs, S.K. et.al, Fusion Eng. and design, 691-696, 2005
2. Combs, S.K. et.al, Review of scientific instruments 77, 073503, 2006

**Eligibility:**

Students of Electronics/Instrumentation/Physics branches can submit their application at following email addresses

[**ranjana@ipr.res.in**](http://)**[Guide e-mail address]**

**and**

**project\_ee@ipr.res.in [Project coordinator’s e-mail address]**

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