Non-Destructive Testing (NDT) is a branch of scientific methods and techniques which is used to evaluate the defects and irregularities in engineering materials. These methods conduct these testings without destroying or altering its structure and functionality. Most of these defects are subsurface making them difficult to detect and access.

SONIC INFRARED (IR) is a relatively new and emerging vibrothermography method under the category of NDT methods. This is a fast NDT inspection method that uses an ultrasonic generator to pass an ultrasonic pulse through the test specimen which results in a temperature variation in the test specimen. The temperature increase around the area of the defect is more because of frictional heating due to the vibration of the specimen. This temperature variation can be observed from using a thermal camera.

In this research study, an infrared thermal camera is used to record the temperature variation in the composite laminate during the SONIC IR testing. These recorded data are used to determine the location, dimension and depth of defects through SONIC IR NDT method using existing defect detection algorithms. Probability of detection analysis is used to determine the probability of detection under specific experimental conditions for both the types of composite laminates. Lastly, the effect of the process parameters for this technique on the detectability and probability of detection is studied in detail.