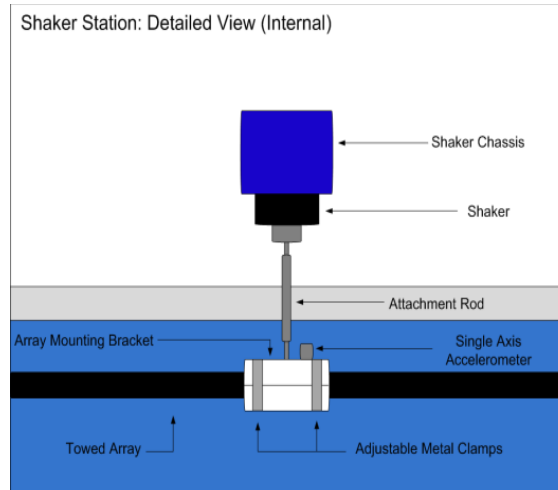
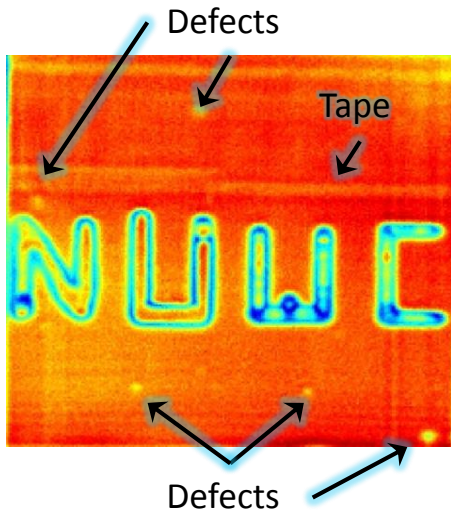




# Terahertz Imaging, Physics-Based Modeling & Towed Array Stress Analysis



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## Project Objective and Research Approach:

- Scan multiple objects with a terahertz imaging sensor to generate images showing hidden defects and subsurface structures
- Expand knowledge of MATLAB by developing code which models a projectile in motion.
- Replicate turn induced strum vibrations of a towed array and analyze stress levels with a mechanical shaking device and data collection software (TASM – Towed Array Stress Machine)

## Navy Relevance:

- Terahertz imaging applications can efficiently scan targets to find hidden defects
- Analyze and record the gravitational force on a towed array to inquire about possible failure points under operation to further development of present-day towed arrays

## Results and Accomplishments:

- Learned how to scan and monitor a device under test with the goal of finding potential defects with terahertz imaging
- Processed terahertz images with MATLAB to highlight discovered defects
- Developed a Standard Operating Procedure (SOP) for TASM
- Designed visual drawings of TASM components with Visio
- Conducted tests which collected TASM data while varying shaker frequency, spacing and amplitude over a series of time

## Next Steps:

- Develop a low-cost maintenance procedure for the Department of the Navy's fleet utilizing terahertz imaging
- TASM – measure the durability of towed arrays by testing them with their electronics and developing a procedure to further extend their life expectancy