Dan Baima 11/9/14

OCE 496 Bridge Team

Acoustic Waveguide Background Research & Sources

**Acoustic Waveguides**

University of Colorado, Boulder

<http://spot.colorado.edu/~pricej/pdf%20docs/Acoustic%20Waveguides.pdf>

* The whole idea is to obtain data that has less interference from outside factors: Uses example of a bugler in a room (sound bouncing off walls, non-uniform emission, etc.)
* If you instead record the sound when it is still inside of the bugle, it is more direct and ‘cleaner’
* Lots of elementary acoustics equations, spreading
* Mostly focusing on propagation through air (inside of sound tube waveguide

**A Wire-Guided Transducer for Acoustic Emission Sensing**

<http://users.ece.cmu.edu/~dwg/research/6529_35Wireguided.pdf>

* “A novel transducer for active or passive sensing has been developed and tested experimentally.”
* Small wire can act as a ‘middleman’ (waveguide) from material being tested to a piezoelectric sensor- useful for source localization, high temperatures and otherwise problematic mounting areas

**The Effect of Waveguide Material and Shape on Acoustic Emission Transmission Characteristics**

<http://www.ndt.net/article/jae/papers/22-264.pdf>

* ” This paper presents the effects of varying waveguide material and/or shape on traditional
* acoustic emission characteristics of pulsed events”
* Experiments found no significant attenuation, however signals did appear contaminated by reflections and resonance.
* “When implementation of this technology is necessary, specific designs should be tested prior to installation to determine actual transmission characteristics”

**Analysis of Piezoelectric Ultrasonic transducers attached to waveguides using waveguide finite elements**

<http://www.ncbi.nlm.nih.gov/pubmed/18019242>

Interesting, however cannot locate source at this time

**Plasmonic-Induced Transparency in Metal? Dielectric ? Metal Waveguide Bends?**

<http://iopscience.iop.org/1882-0786/6/8/082201/pdf/apex_6_8_082201.pdf>

URI??? Zhang

**Non-Destructive Evaluation of the Curing Of Resin and**

**Prepreg Using an Acoustic Waveguide Sensor**

<http://lib.dr.iastate.edu/cgi/viewcontent.cgi?article=1414&context=qnde>

Polyester fiberglass waveguide

**Ultrasonic Horn**

<http://en.wikipedia.org/wiki/Ultrasonic_horn>