Ashwin S. Athram, Excitation setup for ultrasonic hyperthermia, M. Tech. Thesis, Department of Electrical Engineering, Indian Institute of Technology Bombay, 2002.

Supervisor(s): T. Anjaneyulu, P. C. Pandey

Abstract **-** Ultrasound is one of the modalities of hyperthermia treatment for cancer in which the temperature of the cancerous tissue is to be raised by 4-5 degrees above the normal body temperature. Heating of the target tissue by ultrasound should be more than that of the surrounding areas. This project involves developing and testing a system for directing ultrasound from multiple transducers on a target in a water bath. Water immersible transducer probes for continuous wave excitation were made using piezoelectric crystals. Four such transducers probes were mounted on a circular disc and oriented such that their beams direct at the target. They were then excitation sequentially to deliver more energy at the target than at the surrounding regions. Hardware used such as power amplifier, switching circuit using microcontroller and relays was implemented and tested for switching and exciting the transducers in different sequences. The experiments for field measurement during various modes of excitation are described and the results are analyzed.