

## **On reconstruction of a welding area and the enclosure method**

We deal with a typical reconstruction problem arising from a spot welding. This is a mathematical model for nondestructive evaluation of spot-welds existing between one common side of two plates. Originally, this problem should be considered in three dimensions; however, as a starting point, we formulate its two dimensional version. Then we employ the enclosure method originally proposed by Ikehata in the late 20th century.

In this talk, we would give an overview of the enclosure method and introduce how to extract information about the location of tips of the welding area from a single set of data, that is, injecting a direct current and measuring the resulted voltage on the accessible side of the welded plate.

This talk is based on the joint research with Masaru Ikehata (Hiroshima University, Japan) and Akira Sasamoto (National Institute of Advanced Industrial Science and Technology, Japan).