

ACOUSTICS2008/1659
source localization and tracking in a waveguide via sequential bayesian estimation

Kevin Cockrell and Henrik Schmidt
MIT, 77 Mass Ave, 5-204, Cambridge, MA 02139, USA

This talk addresses the problem of sequentially estimating the location of a moving acoustic source in a waveguide, given a series of acoustic field measurements from an array. The approach taken, in its most general form, is known as sequential Bayesian estimation. A well known special case of sequential Bayesian estimation is the Kalman filter. However, the Kalman filter is only optimal when the relationship between the measured parameters and the ones to be estimated is linear with Gaussian noise. Given the highly non-linear relationship between the acoustic source location and the measured acoustic field, other approaches must be taken. The performance and computational feasibility of various approaches, such as grid-based methods, will be explored using simulated data.