SLAM with fleeting detections

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This talk deals with simultaneous localization and mapping (SLAM) in the case where detection of marks are available only when some given equality conditions are satisfied. For this type of problems, which are often met when lateral sonars are involved, the detections are qualified as fleeting because they are available only at some unknown dates. A new set-membership approach able to deal efficiently and reliably with fleeting SLAM is presented. The main idea is to introduce an arithmetic for interval functions (or tubes) and to use this arithmetic to allow a propagation through constraints involving trajectories. An illustration related to SLAM in an underwater environment will be given.