

**Title: DP System of an Underwater Vehicle for Oceanic Space Docking**

**Authors: Xinqian Bian, and Tao Chen, Harbin Engineering University**

### **Abstract**

Oceanic space-docking plays an important role in underwater vehicle technology for applications of deep submarine rescue and sub-sea space station. Reliable dynamic positioning (DP) is essential for operation of underwater vehicle docking in badly situation. In this paper, 6-DOF DP mathematic model and 6-DOF DP system addressed in low visibility, faster current and serious gradient situations for oceanic space-docking are introduced. The control equipment and control approach of 6-DOF DP system are introduced in detail. In order to realize automatic docking process, the hybrid control system based on 6-DOF DP is designed. The bottom of the hybrid control system are different control functions to control 6-DOF motions of the vehicle. The middle is conversion interface to generate events according to system states and produce control rules. The upper is operation machinery of discrete event to analyze events and guide the docking process. Successful tank experiments dealing with complex real underwater scenes are reported and validate the proposed DP system in this paper.

**Click below to:**

**[Review the complete paper](#)**

**[Return to the Session Directory](#)**

*No presentation*