

**Department of Civil and Environmental Engineering**

and

**Department of Ocean and Resources Engineering**

*Seminar*

**Dynamics of air cushion supported structures**

by

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### **Abstract**

The talk looks at two types of air cushion supported structures: one with an internal free surface and the other without. An example of the former is an open bottom concrete gravity substructure where the air cushion is sealed by a water plug. The presence of the internal surface causes the open bottom structure to behave similar to a closed bottom structure. We present experimental heave and pitch response for the two structures, and compare with theoretical formulations.

Forward moving air cushion vehicles such as hovercrafts are examples of the second category. Experimental modeling of these structures is complicated because of the unrealistically high air stiffness arising from the atmospheric pressure at model scale. Thus model scale dynamics can be quite different from full scale. We present a simple method of scaling the air cushion properly at model scale, using a prestressed balloon. Theoretical formulation for pressure-volume relationships are compared with experimental measurements.