CONTROL OF WATER WAVES AND FLUID-STRUCTURE INTERACTIONS

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FIGURE 1. A PROTOTYPE OF OPT'S POWERBUOY WAVE ENERGY GENERATION SYSTEM (NREL PIX 17114)

Ocean waves provide an enormous source of renewable energy and this energy is naturally replenished. And many wave energy convertors, which can transform kinetic energy to electical power, have been designed and tested. The famous device used to convert energy is Floating-Point Absorber (FPA), which is usually placed between the sea bed and the floater to capture the wave-induced motion of the floator. The system shown in figure 1 is Ocean Power Technology's (OPT's) 40-kW utility-scale PowerBuoy in Ohau Hawaii. The main problem in this field lies in the inefficient energy extraction and the risk of device damage. Our research is to tackle these challeges in control theory.