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**U-OWC devices embodied into breakwaters:
from small-scale field experiments in the NOEL lab to the first
prototype in the Mediterranean Sea**

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Monday **06/05/2019**, time **13:00pm**
Room **A**, Department of Civil Engineering

Abstract: The lecture will give an overview on some activities in the Mediterranean Sea concerning wave energy exploitation with Resonant Wave Energy Converters (REWEC3 or U-OWC). Then, some facilities of the Natural Ocean Engineering Laboratory (NOEL) in Reggio Calabria for small scale field experiments will be shown by describing some recent activities concerning marine energy.

Firstly, some results will be shown on the new devices U-OWC. They are based on the principle of the classical OWC (Oscillating Water Column), but they include a small vertical U-duct that can be designed for tuning a system with a certain eigen-frequency at the design stage, so to obtain an impressive natural resonance without any device for phase control. Two small-scale field experiments (at 1:8 and 1:10 scale) carried out in the NOEL to validate the semi-analytical model of the plant will be discussed.

Then, a full-scale device (prototype) built within a major project in the Port of Civitavecchia (the Port of Rome, Italy), where 500m of the new breakwater embody a U-OWC device, will be discussed. The design logic and the performance of this device in absorbing wave energy and in producing electrical power will be examined. The former issue pertains to the safety of the area close to the structure; the latter pertains to the determination of the efficiency of the system in harvesting wave energy.

Finally, some aspects related to two new projects on U-OWC in the Port of Salerno and in the Porto delle Grazie (which is a Marina in Roccella Jonica), will be investigated.

