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UNIVERSITÀ DEGLI STUDI DI PADOVA

SELEZIONE PUBBLICA N. 2023N61, PER ESAMI, PER L'ASSUNZIONE A TEMPO INDETERMINATO DI N. 1 PERSONA DI CATEGORIA D, POSIZIONE ECONOMICA D1, AREA TECNICA, TECNICO SCIENTIFICA ED ELABORAZIONE DATI, A TEMPO PIENO, PRESSO L'UNIVERSITÀ DEGLI STUDI DI PADOVA.
TECNICO DI LABORATORIO MARITTIMO.

QUESITI COLLOQUIO

BUSTA N.1

- DOMANDA n.1
  Che caratteristiche deve avere il materiale granulare da adottare per la realizzazione in scala di una diga a gettata (in relazione a forma, densità, *sorting*, metodo di vagliatura, dimensioni e peso).
- DOMANDA n.2
  Pianificare una prova in canale ad onde (2D) per lo studio della tracimazione ondosa in un'opera di difesa a gettata con muro paraonde.

BUSTA N.2

- DOMANDA n.1
  Come si realizza in laboratorio un elemento speciale in cls (es. Tetrapodo) in scala ridotta (in relazione al progetto della cassaforma/stampo, alla densità e al peso).
- DOMANDA n.2
  Pianificare una prova in vasca ad onde (3D) per lo studio della penetrazione ondosa in un porto.

Theorem 1: If there is a discrepancy between a theory and the experiment carried out to verify it, it is likely to be due to inaccuracies in the experiment.

Theorem 2: It is far more difficult to make good experiments than it is to make good theories.

Theorem 1 is a warning against overconfidence in experimental results, particularly when errors are introduced because the experiment conditions do not conform to theoretical assumptions. Theorem 2 evolves from experience and from seeing Theorem 1 repeatedly proven!

1.5.5 Some Definitions...

Several terms related to physical modeling have been used throughout this chapter, and hopefully their meaning was evident either from the surrounding text or from the reader's previous encounters with these terms. The more important terms are briefly defined below.

- **Prototype:** The situation which is being modeled, either at the same size, or more often, at reduced scale. The prototype condition does not necessary have to be a "naturally-occurring" physical phenomenon.
- **Scale:** Constant proportions of measurable characteristics between model and prototype (Yalin 1971). Scales are ratios between the prototype value and the model value of a given parameter.
- **Similitude (or Scaling) Criteria:** Formal mathematical conditions that must be met by the scale ratios between prototype and model. These criteria can be determined from mathematical representations of the physical properties, but they are only as good as the representation itself (Yalin 1971).
- **Similarity:** A condition that exists when a model gives a similar response as the prototype, even if the model is not in strict similitude with the prototype. It is possible to have model similarity without meeting similitude criteria when some macroscale feature of interest (e.g., beach profile) is satisfactorily reproduced in the model.
- **Scale Effects:** Differences between the prototype and model response that arise from the inability to simulate all relevant forces in the model at the proper scale dictated by the scaling (similitude) criteria.

- **Laboratory Effects:** Differences between prototype and model response that arise from limitations of the laboratory facilities, such as wave and flow generation techniques, solid model boundaries, etc.
- **Mathematical Model:** A mathematical representation of the physics of a coastal process and its response to hydrodynamic forcing. Mathematical models can be analytically solved for some simple cases, whereas more complex flow regimes require a discrete, numerical representation of the process which is then solved using a computer.
- **Numerical Model:** A special case of the *Mathematical Model* where solution of the mathematical equations thought to govern the physical processes are discretized and solved using a computer. Discretization can occur over time and space, and hydrodynamic forcing is input at the model boundaries.
- **Hybrid Modeling:** An investigation where a physical model is used to obtain results for complex flow regions that are beyond analytical understanding, and a numerical (mathematical) model is used to solve over other portions of the region which fall into the realm of validity for the numerical model. Depending on the situation, results from one model can be used as input to "drive" the other model.

ALLEGATO n. 3
VERBALE n. 4