

UNIVERSITY OF CRETE  
DEPARTMENTS OF MATHEMATICS AND APPLIED MATHEMATICS

COLLOQUIUM

11:15pm, Thursday, 17 October, 2019  
Room A-303

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*Toward the real time tsunami danger evaluation*

The problem of timely warning about the danger of nearfield tsunami after the strong offshore earthquake is still unresolved, even if the number of publications is rather large. For the coast of Japan it takes nearly 20 minutes for tsunami wave to approach the nearest dry land after offshore seismic event. Robust evaluation of tsunami wave danger should be based on correct process simulation: wave generation, propagation, and inundation to a dry land. There are several software tools to calculate the wave propagation over the real digital bathymetry. However, it takes rather long in case of the fine calculation mesh. Results of code execution acceleration are discussed. With the use of modern Graphic Processing Units (GPUs) it is possible to achieve performance gain 100 (to calculate the wave propagation 100 times faster) and even more with Field Programmable Gates Arrays (FPGAs). Fast algorithms to determine initial sea surface disturbance at tsunami source are also considered.