

## Special Program in Applied Mathematics and Applied Mechanics

*Detached-eddy simulation of flow and coherent structure around complex structures in an open channel*

Prof. Wen-yi Chang

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15:30 - 17:30

103, Mathematics Research Center Building (ori. New Math. Bldg.)

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Numerical simulations are often used as tools for solving hydraulic and environmental engineering problems, in which turbulence mostly plays an important role in these problems. In the last two decades, the research for turbulence modeling has clearly shifted from RANS to LES methods, and with computer power increasing the latter seems to become suitable tools for practical applications. However, for high-Reynolds number flows, a truly wall-resolving LES is still too expensive, and thus the DES, the hybrid RANS-LES model, has been developed. In a DES, the near-wall region is calculated by RANS and regions away from the wall by LES, hence the DES poses a great potential for solving practical problems at high Reynolds number. In this talk, the DES theory and numerical method will be introduced. One or more cases of DES for flow around complex structures in an open channel will be given to illustrate simulation details, such as grid generation, initial and boundary conditions, etc. Then, the simulation results will be visualized and discussed.



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