January 15, 2007

A PhD position (“Early Stage Researcher”) for Stochastic analysis of responses of marine structures to wave and wind loads is available at Chalmers University, Göteborg, Sweden, in co-operation with Det Norske Veritas, Hövik, Norway

The employment is a part of the EU Marie Curie Research Training Network SEAMOCS. The research training will combine Mathematical statistics, Shipping and Marine technology, and Marine safety, and is intended to lead to a PhD exam in Mathematical statistics at Chalmers. Part of the training will be located at Det Norske Veritas A/S.

The position is available only for candidates who have graduated outside Sweden and have spent less than one year in Sweden during the last three years.

Tasks

Risk assessment of marine structures (offshore structures and ships) and marine operations is a complex subject. There are several hazards involved caused by extreme wave loading, aging of material and other undesired responses due to interaction of a structure with random environment.

The focus will be on fatigue damage at hot spots of a structure. The common standard approach is to assume that the wave loads can be modeled as Gaussian processes (fields) and that the structure behaves linearly (i.e. stress-based fatigue design philosophy often referred to as high-cycle fatigue). However, it is well known that for severe sea states waves are non-Gaussian and the response of a structure can be nonlinear. In some fatigue tests one has observed that non-linear effects may lead to acceleration of fatigue damage accumulation. The variability of wave climate between different seasons and/or geographical locations will affect the rate of the accumulated damage. Several uncertainties, e.g. material, geometry, model, external loadings and other, are involved when predicting fatigue life time. To combine those uncertainties the so called safety indexes can be computed and then used to plan safety measures.

A related problem is evaluation of risks for external undesired responses due to wave structure interaction. Here a detailed analysis of response dynamics should be combined with uncertainties related to description of sea waves modeled as stationary random processes. Since the design practice is moving towards a more consistent probabilistic approach, for example, extremes are determined for a given return period (e.g. expected lifetime of the structure), long-term distributions of sea surface characteristics will be developed. Such models could include the uncertainties for possible trends due to climate changes.
Special rules

The position is limited to at most five years. Applicants must have a strong background in mathematics and mathematical statistics. They have also obtained an undergraduate degree or expect to complete that degree by September 1, 2007. The School aims to increase the number of female employees, and especially welcomes female applicants.

The deadline for your full application to arrive is March 1, 2007.

Information and application procedure

For further information contact

At Mathematical statistics – Igor Rychlik, e-mail: rychlik@chalmers.se, or Jacques de Maré, e-mail: demare@chalmers.se, telephone +46 31 772 35 55,

At Shipping and Marine Technology – Jonas Ringsberg, e-mail: Jonas.Ringsberg@chalmers.se, telephone: +46 31 772 14 89

The application should contain the following documents:

A letter of application; listing specific research interests; a curriculum vitae; attested copies of undergraduate degrees and other certificates; copies of relevant work, for example master thesis or articles, that you have authored or co-authored; a description of previous teaching experience, documented; if any previous PhD studies, also in other subjects, stat financial support for these; letter of recommendation from your teachers or employers, if you have any previous work experience.

Please submit your application together with your merit documents marked ref 2007/18 no later than March 1, 2007, electronically in pdf format to registrator@adm.chalmers.se (Telephone: +46 31 772 10 00).

It is also possible to mail to Registrar, Chalmers University of Technology, SE-412 96 GÖTEBORG, SWEDEN (fax +46 31-772 49 22).

Union representatives,
SACO Jan Lindér, TCO Monica Orrbacke, SEKO Ralf Berndtsson