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The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

Faculty of Engineering
Institutt for konstruksjonsteknikk

PhD position in dynamic modelling and analysis of long span cable-supported bridges (IV 191/18)

Position within dynamic modelling and analysis of long span cable-supported bridges subjected to wind loading with emphasis on probabilistic modelling of the wind field

Description.

Norwegian Public Roads Administration (NPRA) is running a project "Ferry free coastal route E39". The research program and the project are presented in this video <https://vimeo.com/257970739>. Some of the straits are up to 5 kilometres wide and 1.5 kilometres deep and calls for significant extension of present bridge technology. The installations have to resist extreme environmental loads and accidental actions.

One of the essential requirements of modern bridge design is to avoid excessive levels of wind-induced vibrations. The Hardanger Bridge was opened on August 17th 2013. It is the longest suspension bridge in Norway and among the top 10 longest suspension bridges in the world, with a main span of 1310 m. A bridge monitoring program including measurement of wind velocities and accelerations along the bridge is currently carried out by the Department of Structural Engineering.

The results from the monitoring program show that we are unable to capture the large variability of the dynamic response with current methodology. Today's practice is to calculate the wind-induced dynamic response as a function of the mean wind velocity alone, while assuming that the remaining parameters of the wind field are deterministic. The measurements from the Hardanger Bridge show that one will get a clearly better prediction of wind-induced dynamic response and load effects, taking into account the statistical distributions of turbulence intensity, integral length scales, as well as other parameters.

This research project aims at developing a new methodology for prediction of wind induced dynamic response of long span bridges. There will be a special emphasize on probabilistic modelling of the wind field and how to use available data from meteorological models, terrain models and site measurements to predict the wind induced dynamic response in a probabilistic manner.

Qualifications

Suitable background (master's degree) would be within bridge engineering, wind engineering, structural dynamics, stochastic dynamic analysis. The PhD applicant is expected to carry out experimental research and to develop advanced numerical models within the scope of the project. The successful applicants are motivated and ambitious students with excellent grades. Proficiency to carry out goal-oriented work and good cooperation abilities will be emphasized. Excellent communication skills in scientific writing and oral presentation are needed.

Conditions

PhD Candidates are remunerated in code 1017, and are normally remunerated at gross NOK 436 900 before tax. There will be a 2 % deduction to the Norwegian Public Service Pension Fund from gross wage.

Engagement as a PhD Candidate is done in accordance with "Regulation concerning terms and conditions of employment for the posts of post-doctoral research fellow, research fellow, research assistant and resident", given by the Ministry of Education and Research of 19.07.2010. The goal of the positions is to obtain a PhD degree. Applicants will engage in an organized PhD training program, and appointment requires approval of the applicants plan for a PhD study within three months from the date of commencement.

The position is of 3 years duration.

For further information about the position, please contact Associate Professor *Ole Øiseth*, *Department of Structural Engineering, NTNU, Trondheim*. E-mail: ole.oiseth@ntnu.no

See <https://www.ntnu.edu/iv/doctoral-programme> for more information.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants. The positions adhere to the Norwegian Government's policy of balanced ethnicity, age and gender. Women are encouraged to apply.

The application

The application must contain information of educational background and work experience. Certified copies of transcripts and reference letters should be enclosed. Applications with CV, grade transcripts and other enclosures should be submitted via this webpage at www.jobbnorge.no.

Mark the application with IV-191/18.

Start-up date tentatively fall 2018.

Application deadline is 23 July 2018

According to the new Freedom of Information Act, information concerning the applicant may be made public even if the applicant has requested not to be included in the list of applicants.

Jobbnorge-ID: 153800, Søknadsfrist: Søknadsfristen er gått ut