**Zhen-Pei Wang**

# Isogeometric Shape Optimization for Quasi-Static Mechanical Problems by Using Continuous Adjoint Method

The development of isogeometric analysis (IGA) has triggered renewed interest in shape optimization due to the seamless integration between computer aided design and analysis. Traditionally, shape optimization problems have been mostly limited to static loads. In the present contribution, the formulation of shape optimization is extended to include time-dependent quasi-static loads and responses. A general objective functional is used to accommodate both structural optimization and passive control for mechanical problems. An adjoint sensitivity analysis is performed at the continuous level and subsequently discretized within the context of IGA. Shape optimization of a structure under quasi-static loading has been studied and validated using a passive control approach. The methodology is illustrated by considering problems where an external load is allowed to change as a function of time. The results show that the methodology developed for quasi-static processes can be employed to systematically solve problems that are relevant for a variety of technological applications in the framework of structural design and inverse problems.

time:          Thursday, June 26th, 2014, 16:00
location:      meeting room 7
organization:  Dr. Martin Ruess  ‹m.ruess@tudelft.nl›