Research outputs:

**Topology optimization of free vibrations of fiber laser packages**

The optimization problems described in the present paper are inspired by the problem of fiber laser package design for vibrating environments. The optical frequency of tuned fiber lasers glued to stiff packages is sensitive to acoustic or other mechanical vibrations. The paper presents a method for reducing this sensitivity by limiting the glue point movement on the package while using only a limited knowledge of vibrating external forces. By use of topology optimization a density distribution for the package is obtained, where the critical eigenmode of the package only effects a small elongation of the fiber laser.

**Fibre laser sensors - a new tool in hydroacoustics**

This paper deals with modeling of a DFB fiber laser based hydrophone. Both an analytical and a finite element model are developed to describe the acoustic response of the hydrophone. Results from the finite element model are compared to the analytical results. The small dimensions (length 3-6 cm) and low frequency noise properties of DFB fiber lasers make them useful as hydrophones. Generally, for underwater surveillance applications or similar tasks the acoustic pressure...
sensitivity of the fiber laser needs to be enhanced by more than two orders of magnitude. Our models predict that this can be achieved by an intermediating amplifying mechanical mounting.

**General information**
Publication status: Published
Organisations: Solid Mechanics, Department of Mechanical Engineering
Contributors: Hansen, L. V., Kullander, F.
Publication date: 2004

**Host publication information**
Title of host publication: Proceedings of 21st International Congress of Theoretical and Applied Mechanics
Volume: 2 pp. (CDROM ID: FSM1S_12533)
Place of publication: Warsaw
Publisher: IPPT PAN
Source: orbit
Source-ID: 155824
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2004 › Research › peer-review

**Constant Frequency Condition of Fiber Lasers in Strain**

**General information**
Publication status: Published
Organisations: Department of Mechanical Engineering
Contributors: Hansen, L. V.
Publication date: 2002

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Source: orbit
Source-ID: 62509
Research output: Chapter in Book/Report/Conference proceeding › Article in proceedings – Annual report year: 2002 › Research › peer-review

**Projects:**

**Smart indpakning af fiber lasere**
Voxen, L. H., PhD Student, Department of Mechanical Engineering
Sigmund, O., Main Supervisor
Pedersen, J. E., Supervisor
Poulsen, C., Supervisor
Thomsen, J. J., Supervisor
Santos, I., Examiner
Hald, J., Examiner
Tinnsten, M., Examiner
1/3 DTU-stip, 2/3 FUR/andet
01/12/2001 → 18/05/2005
Award relations: Smart indpakning af fiber lasere
Project: PhD