

KTH-CSC 合作奖学金职位: 机械工程、力学专业

奖学金介绍

KTH-CSC 合作奖学金项目是根据国家留学基金管理委员会与瑞典皇家理工学院（Kungliga Tekniska Högskolan, KTH Royal Institute of Technology）签署的合作协议，双方共同设立了国家留学基金管理委员会与瑞典皇家理工学院联合奖学金项目，拟以提高竞争性的方式共同资助针对我国优秀人员赴瑞典皇家理工学院研修。根据合约每年可提供奖学金最大数额为全博士-Full PhD 50 人，联合培养博士生 20 人及访问学者 5 人。KTH-CSC 合作奖学金项目从 2005 年开展至今已经持续了 15 年，资助了许许多多优秀的人才，2021 年 KTH-CSC 合作奖学金项目已经启动。

机械工程、力学专业职位

KTH 官方网页如下 <https://www.kth.se/en/studies/phd/kth-csc-programme-1.12818>

其中**机械工程、力学专业**招生两名

- **专业：机械工程或力学专业**
- **全博士-Full PhD：48 个月**
- **访问学者：3-12 个月**

奖学金构成

按照 KTH 的最新博士生培养方案（只限于 KTH 注册全博士-Full PhD），2018 年 7 月 1 日之后录取的博士生，将受到四年的资助。根据瑞典的法律规定，所有的 PhD 所受资助金额必须达到 KTH 的相应标准。2021 年 KTH 博士生的税后基本工资标准 doktorandstegen (salary grades for doctoral student employment) 分为四等：

Level1（博士第一年）：23,000 SEK/month; Level2（博士第一年）：23,500 SEK/month;

Level3（博士第一年）：25,000 SEK/month; Level4（博士第一年）：26,000 SEK/month

对于参加 KTH-CSC 项目的注册全博士-Full PhD，其奖学金构成如下：CSC 奖学金+附加奖学金，总额必须达到相应的工资标准。CSC 提供的资助为每月 15,000 瑞典克朗（按当前汇率折合约人民币 11,000 元），与工资标准的差额由学院提供额外奖学金补齐，特别注意的是，**该额外奖学金不需要单独申请，会由学院主动提供。**（联合培养博士生和访问学者只能享受由 CSC 提供的每月 15,000 瑞典克朗奖学金。）

报名方式

1. 递交网上申请表: <https://www.kth.se/form/5d5e43eaeafec722452a4298>

2. 邮件递交所需申请资料，**无需递交纸质申请材料**（以下信息以官网为准）：

- 签署的申请表
- CV
- 本科及研究生的学位证明
- 语言证明
- 已发表刊物的题目列表
- 成绩单（含本科）

KTH-CSC 项目流程及重要时间节点

- 2020.10.26-2021.1.10 学生/学者递交申请
- 2021.1.11-2021.2.22 指导员对申请进行评估，并将回复表发送至国际关系办公室
- 2021.2.23-2021.3.5 国际关系办公室将合格候选人名单发送至各个学校进行最终审查
- 2021.3.12 国际关系办公室将官方邀请函发送给合格的候选人

联系人

Xiaogai Li, Email xiaogai@kth.se, Assoc. Prof. at KTH

Svein Kleiven, Email sveink@kth.se, Prof. at KTH

职位详细信息如下

Solid mechanics; Mechanical engineering (Reg. No. 2104)

Type of position Full PhD student: (48 months)	Main supervisor Xiaogai Li
KTH School CBH	Co-supervisor(s) Peter Halldin; Svein Kleiven
KTH Department Biomedical Engineering and Health Systems (MTH)	Main email contact xiaogai@kth.se

Specific subject area(s)

Head injury biomechanics; Finite element modeling; Head protection systems

Title of project

Mechanisms of head and neck injuries towards improved head protection systems

Number of available positions

1

Earliest start date

01 September, 2021

Short description of the project

Traumatic brain injury (TBIs) is a worldwide problem not only lead to substantial financial burden but also long-lasting consequences for the victims and close relatives. A better understanding of injury mechanisms is a necessary step towards developing novel and effective head protection systems to reduce the risks of brain injuries. Despite extensive research on adults, the injury biomechanics for children are less studied. Today, head protection for children are mostly scaled from adults. But children's heads cannot be taken as scaled small adults head due to nonlinear growth both in material property and geometrical. Further, different ages of children may injure differently. Thus, a better understanding of the age-dependent head injury mechanisms are needed towards developing effective head protection systems (e.g., helmets) specifically for children, further, to optimize for different-ages of children. Besides, with more e-bikes and e-scooters emerging as new commuting tools, there is an urgent need to understand the mechanisms of TBIs in case of falls, as well as to develop targeted head protection systems. This project will be divided into two major parts: 1. Use advanced Human body models (HBMs) and head models of different details of children to study the age-dependent head injury mechanisms; 2. Develop & optimize novel head protection systems for different ages of children, as well as for e-bikers and e-scooters.

The research will be carried out at Division of Neuronic Engineering at KTH in collaboration with MIPS AB – an innovative head protection system company. The Division has a long tradition of performing multidisciplinary researches focusing on developing new and effective technology innovations for head and neck injury prevention as well as clinical treatment using advanced human head models. Since its establishment, several spin-off companies have been founded from the research conducted at the Division, e.g.,

MIPS AB, Impact Neuronic AB, Repair Technologies Sweden AB, Bioservo Technologies. The group also maintains thematically diverse international research collaborations and national industrial partners.

We are seeking a highly motivated and ambitious Ph.D. student for the above-outlined research project. The candidate is expected to have a solid background in solid mechanics. Experience in Finite Element (FE) modeling and computer programming is desirable, but not mandatory. The successful candidate will gain substantial experience in injury biomechanics, finite element modeling, and innovative product design. The candidate will also be given solid technical support and supervision.

Solid Mechanics; Mechanical Engineering (Reg. No. 2156)

Type of position Visiting scholar: (3 - 12 months)	Main supervisor Svein Kleiven
KTH School CBH	Co-supervisor(s) Xiaogai Li
KTH Department MTH	Main email contact sveink@kth.se

Specific subject area(s)

Finite element modeling; Head protection systems; Structural dynamic response.

Title of project

Dynamic response of head protection system in different impact environments

Number of available positions

1

Earliest start date

1 September, 2021

Short description of the project

In this project, novel head protection systems that adapt to different impact environments will be developed and optimized to reduce the risk of traumatic brain injury (TBIs). The research will be focused on the influence of the material performance and structure of the head protection system on the degree of head injury in complex impact environments. The results will provide an optimization method and evaluation basis for the existing head protection systems. The research will be carried out at the Division of Neuronic Engineering at KTH in collaboration with national and international partners.