

Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : Given names :

Status (prof., assistant prof., ...) :

Laboratory : Website address :

Institution : Website address :

Scientific competence of the supervisor:

The supervisor is distinguished professor and group leader in Structural Engineering. He is an expert in, Composite Steel-concrete Structures, Earthquake Engineering, Computational Plasticity, FE Method. He is the authors of more than 70 journal papers. He is associate editor of the ASCE Journal of Structural Engineering and a full member of two committee: ECCS TC11 : composite structure and the ECCS TC13: Seismic Design. He is currently involved in 2 european projects on resilience of steel and composite structures among which a prestigious ETN (6-7% succes rate). He completed 5 EU projects on composite/hybrid structures subjected to blast, impact and seismic loading.

Two major publications in the field proposed for the PhD :

1.
2.

Website address of the personal page :

Supervisor's email :

Description of the research work proposed for a PhD **Topic # (see list) :**

Title :

Subject :

The research project intends to fill existing gaps in knowledge and provide design guidance for specific composite concrete-steel structural elements used in heavily loaded structures, in particular in China. Those composite elements belong to structures defined as "hybrid", which means that they are neither reinforced concrete structures in the sense of Eurocode 2 or ACI318, nor composite steel concrete structures in the sense of Eurocode 4 or AISC 2010. Gaps in knowledge are common to all types of hybrid elements, as they are mostly related to the problem of force transmission between concrete and embedded steel profiles, a situation in which it is not known how to combine the resistances provided by bond, by stud connectors and/or by plate bearings, and how to reinforce the concrete in the transition zones between classical reinforced concrete and composite in order to avoid damaging effects due to curved stress flows. Embedded steel sections are of particular interest as they are often included to provide the necessary ductility. The interaction between surrounding concrete and the steel section will be analyzed thoroughly in order to get further insight in tjhe load transfert mechanisms. Cyclic behaviour will also be considered As detailing and design of the steel-concrete interface are to a large extent similar in all hybrid elements, the intention is to come up with design rules for generic interface problems, as it should be expressed in a design code,

Keywords :

Expected collaborations :

The PhD student will interact with a group of european universities involved in a large research project on hybrid structures under exceptional loading.

Background required from the applicant :

A good command in steel and composite steel-concrete structures and earthquake engineering is required. The applicant should also be familiar with nonlinear analysis using finite elements. He need to be able to develop finite element of members (beam/column)

Existence of a PDF file detailing the proposal ("yes" or "no") :

(see guidelines on the website www-csc.utt.fr)