

# STSM SCIENTIFIC REPORT

- Reference

Short Term Scientific Mission, COST Action TU0904

Beneficiary: Martin Prachař, Faculty of Civil Engineering, Czech Technical University  
in Prague

Host: Paulo Vila Real, Department of Civil Engineering, University of Aveiro

Period: from 12/03/2013 to 02/04/2013 Place: Aveiro (Portugal)

Reference code: COST-STSM-ECOST-STSM-TU0904-120313-024329

- Purpose of the STSM

The main purpose of the STSM was to establish deeper contacts and two-way cooperation. According to the applicants Ph.D. - Beams subjected to lateral torsional buckling under fire. Thesis topic is also close to University of Aveiro previous and current research. Experiences in the current fire design provisions for the lateral-torsional buckling under fire according to the European standards (EN 1993-1-2) were exchanged. Therefore, further investigation in lateral-torsional buckling at fire is desired for the slender sections.

- Description of the work carried out during the STSM

In the Short-Term Scientific Missions (STSM), the behavior of laterally unrestrained steel beams of Class 4 welded and hot-rolled open cross-sections (I or H section) at elevated temperatures were consulted. Numerical model of laterally unrestrained beams at elevated temperatures was made in software Abaqus and compared to models of University of Aveiro in software Safir. General proposal for numerical modelling was discussed. These models were compared with experimental tests performed at the CTU in Prague.

- Description of the main results obtained

During the STSM material for future Banchmark study which is focused on the lateral torsional-buckling of class 4 steel cross-sections were worked out in cooperation with host institution. The Banchmark study is based on experimental tests performed at the CTU in Prague. Comparison between results from FE models Abaqus, FEA and experiments is main aim of this work.

- Future collaboration with host institution

Future cooperation will be focused on gaining of new knowledge in fire design. More precisely numerical parametric study and design of analytical model for beams with Class 4 cross-section subjected to lateral torsional buckling.

Prague 17/04/2013

  
Martin Prachař