

Civil Engineering Department

Railway Track Transitions

UNIC - Research Center in Structures and Construction



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My main research interests are those linked with soil and structures dynamics

Objectives

- Improved solutions for transition zones in railways
- Optimization of maintenance procedures of railway tracks, reducing costs
- Develop a method to predict the long-term behaviour of railway transition zones
- Analyze the importance of non-linear aspects in dynamic models representing railway tracks

Methodology

- Observation of a real railway transitions with field measurements (Fig. 1 - 2)
- Modelling of track settlement using one-dimensional representations (Fig. 3)
- Three-dimensional non-linear numerical modelling of railway tracks (Fig. 4 - 5)

Expected Results

- Novel methods and programs to simulate the long-term and the dynamic response of railway tracks, including segments of track located in transition zones
- Improved knowledge on the ballast behaviour at transition zones



Fig. 1 – Passage on a culvert



Fig. 2 – Field measurements

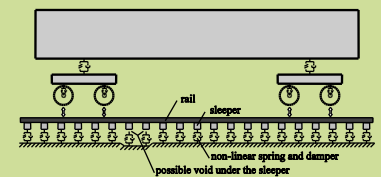


Fig. 3 – 1-D model of track

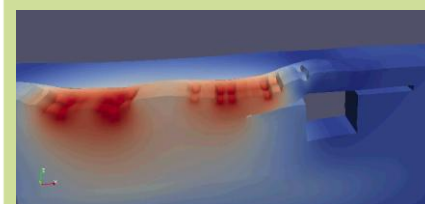


Fig. 4 – 3-D dynamic simulation

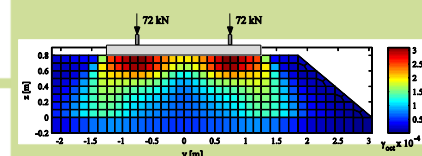


Fig. 5 – Strains inside ballast

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