

Master internship proposal: Study of masonry arches models

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Context

Masonry structures, constructed from stone or brick, are an important part of France's built heritage. Their aesthetics, quality and durability, as well as safety and resource-saving concerns, are all reasons that motivate preservation efforts. However, the heterogeneity and anisotropy of masonry make these structures difficult to model, and a great deal of research is being devoted to the subject. As part of the [ANR Menhir program](#), the [Navier laboratory](#) is one of the leading players in this field of research in France.

Internship objectives

We are looking for an intern to join the laboratory's Multi-Scale team and take part in the thesis work led by Suzanne LÉONARD, supervised by Denis GARNIER, Anne-Sophie COLAS and Benjamin TERRADE. The aim of this PhD is to develop models of masonry bridges that can be used to determine their load-bearing capacity, within the framework of yield design (or limit analysis). Analytical and numerical approaches are complemented by tests on reduced-scale and full-scale models.

The intern will take part in the test campaign on a scale model, both in carrying out the tests and in analyzing the results. His or her findings will be used to prepare full-scale tests, as well as to validate the numerical models developed.

Application

Candidates must have a Master 1 or 2 degree (or equivalent). Knowledge of civil engineering mechanics and programming is required. An interest in stone construction or research will be an asset.

If you are interested in this project, or have any other question, please don't hesitate to contact us by e-mail, attaching your CV and explaining your motivation (suzanne.leonard@enpc.fr).

Location: The internship will take place at the Navier laboratory, located in the buildings of the École nationale des ponts et chaussées, in Champs-sur-Marne (77).

Time period: 3 to 4 months, between April and September 2025.

Salary: Approx. €550/month