

# A study on the contraction joint element and damage constitutive model for concrete arch dams

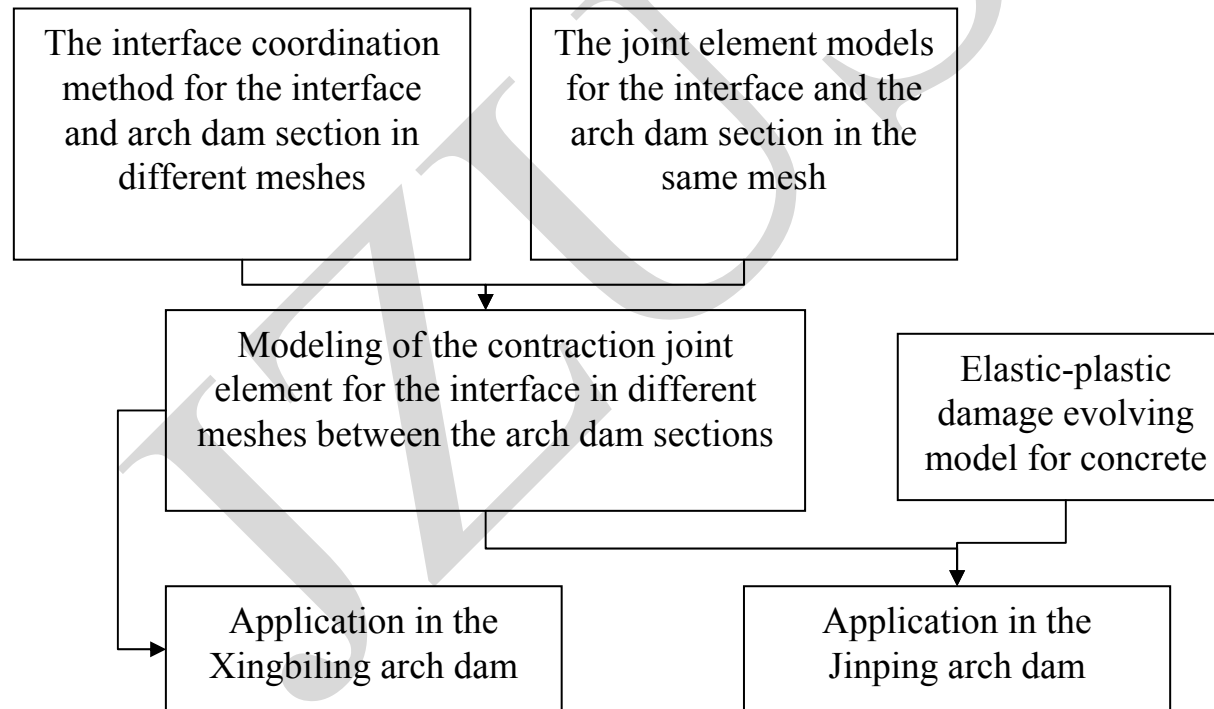
## 混凝土拱坝横缝单元和损伤本构的研究

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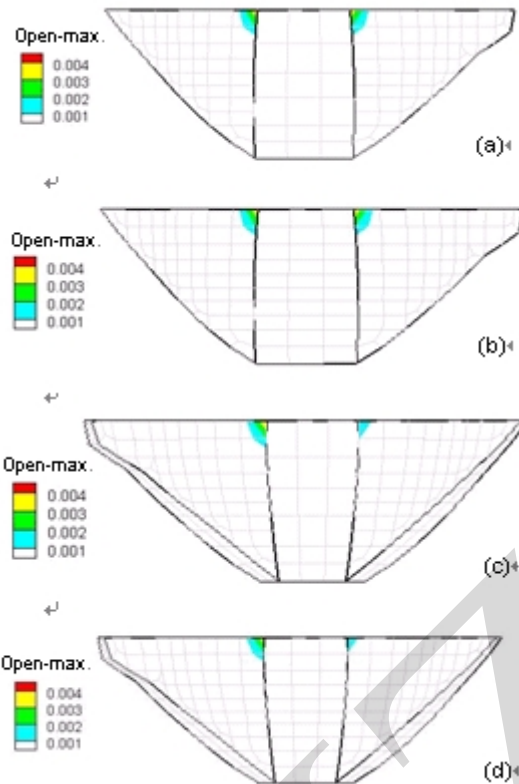
## Main goal of this paper

A new contraction joint element model for the interface in different meshes between the arch dam sections is constructed. And the elastic-plastic damage constitutive model for concrete is taken.

## Model design procedure



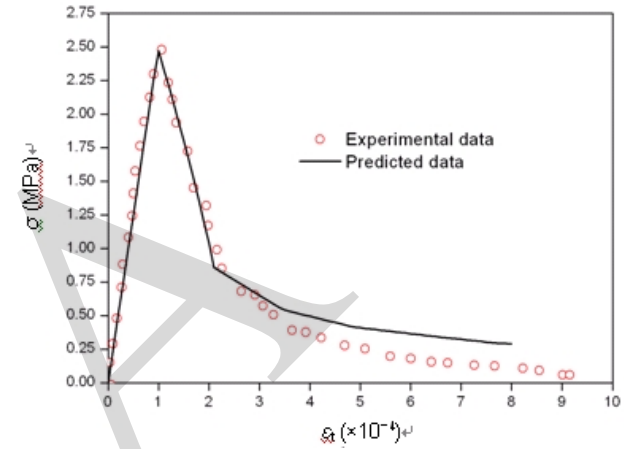
# Computational model and results



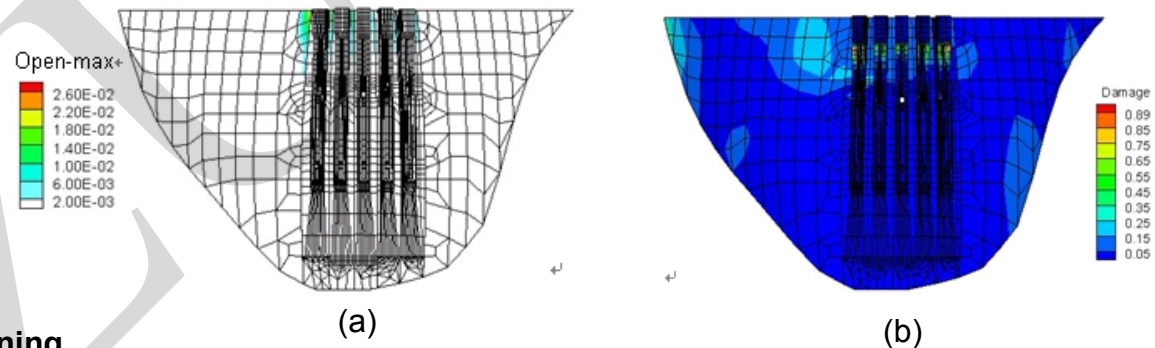
**Fig. 1 Comparison of the maximum opening of contraction joints using different contraction joint element models of Xingbiling arch dam**

The errors of the maximum opening of the arch dam are approximately 6.5%.

The result of the relation of tensile stress and strain of concrete in the axial tensile test calculated by the proposed damage model is very close to experimental data



**Fig. 2 Comparison between experimental data (Wu, 2006) and predicted data calculated by the proposed damage model for concrete in axial tensile test**



**Fig. 3 The maximum opening of contraction joints and damage of Xingbiling arch dam**

The proposed model applied in Jinping arch dam