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

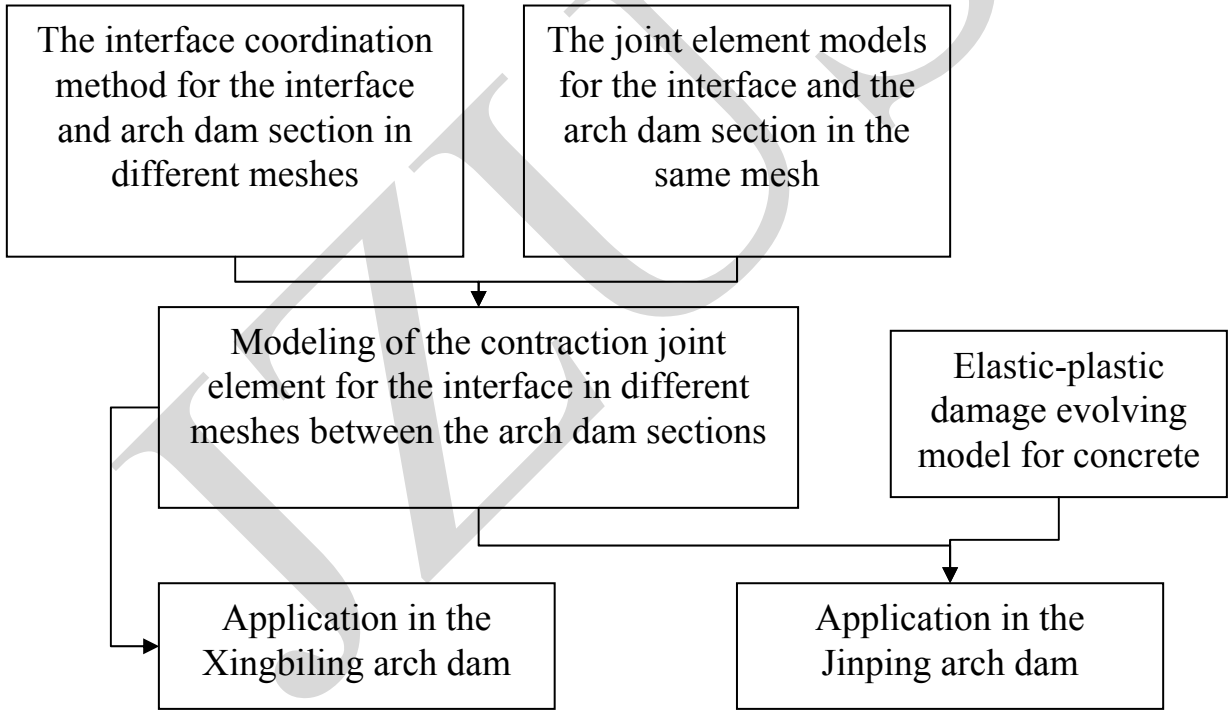
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Main goal of this paper

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



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Computational model and results

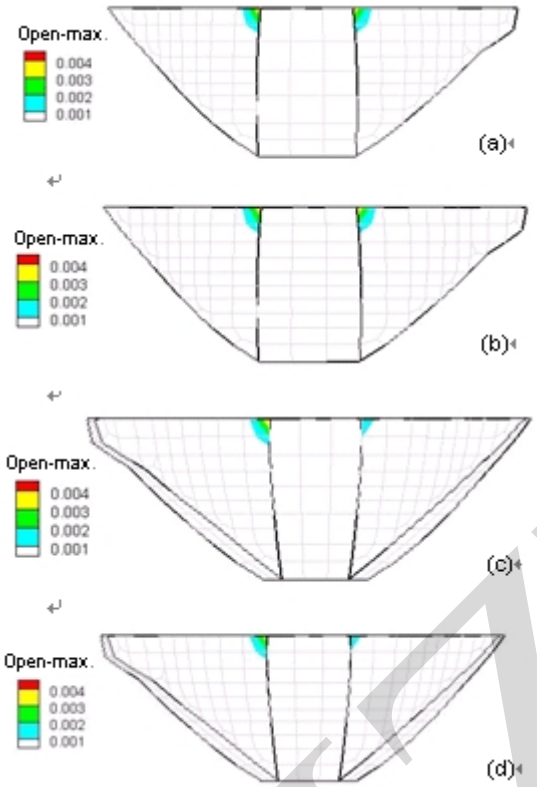


Fig. 1 Comparison of the maximum opening of contraction joints using different contraction joint element models of Xingbiling arch dam

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

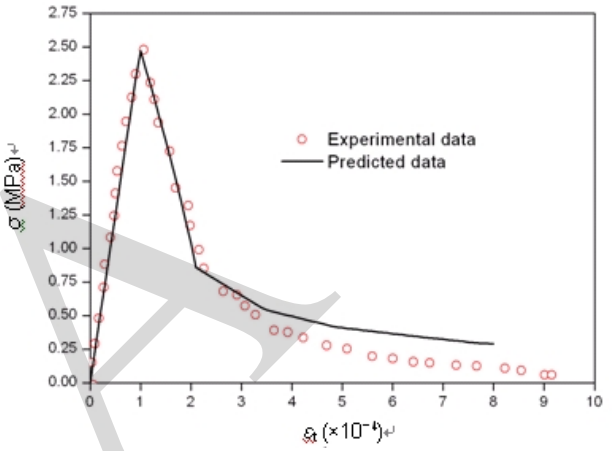
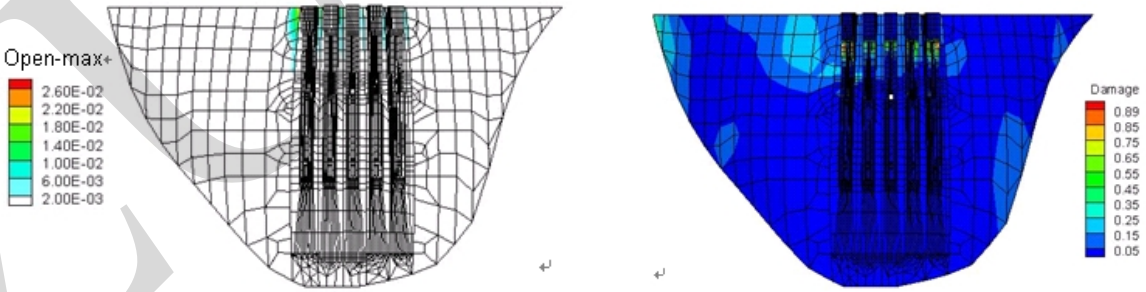


Fig. 2 Comparison between experimental data (Wu, 2006) and predicted data calculated by the proposed damage model for concrete in axial tensile test



(a) (b)

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

The proposed model applied in Jinping arch dam

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