Finite Block Analysis of Masonry Arches

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Abstract:

The application of limit analysis and existing computer methods for the analysis of masonry arches is reviewed. A new numerical method called the Finite Block Method is introduced and can be used to analyze 2D masonry arches of any geometry and under general loading. The new method overcomes many of the limitations of existing techniques and is capable of analyzing masonry arches with center keystones, reduced friction, fixed springers, and differential settlement. A user-friendly program FBA has been developed. The capability and versatility of FBA is demonstrated on a complete bridge structure and on the dynamic analysis of an arch.

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