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Theoretical Analysis on Effect of Anomalous Low Friction in Rock Mass Based on Block Model

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Summary

The block model of effect of anomalous low friction in rock mass was established based on plasticity kinetics and theoretical analysis. And the normal stress formulas of contact interface between rock stratum and roof on elastic stage and elastic-plasticity stage were presented. The theoretical analysis indicates that under dynamic loading, the normal stress of contact interface between rock stratum and roof on elastic stage and elastic-plasticity stage of simple beam both reduce, and the reduction amplitude are both great. The friction force of the contact interface reduces sharply, therefore the existence of effect of anomalous low friction in rock mass is proved. Compared to the normal stress of contact interface on elastic-plasticity stage, the normal stress of contact interface on elastic stage reduces greater, which illustrates when the beam is on elastic stage, contact interface between rock stratum and roof become occur effect of anomalous low friction easier.