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Development of a Fracture Network: blocks and springs model
MARTIN FERER, ADAM JOZWICK, Physics, West Virginia University, DUANE
SMITH, U. S., D. O. E., National Energy Technology Laboratory — Since flow in
fractured reservoirs is significantly enhanced by clusters of inter-connecting fractures,
it’s important to understand their inter-connectedness. In these fractured reservoirs,
one often finds two sets of fractures due to two separate geologic events. We have
developed a blocks and springs model to study how the second generation fractures
intersect the first generation of. We find a percolation-like transition where the
cluster size grows with increasing strain leading to system-spanning fractal clusters.
Increasing the thickness of the layer being fractured leads to sparser system-spanning
fracture clusters with smaller fractal dimension. We have studied how the thickness
of the layer affects the fractal character of the fracture clusters as well as their
number distribution, and the correlations within the large fracture cluster.

Martin Ferer
Physics, West Virginia University

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