

Problem Statement

Modeling hydraulically fractured horizontal wells is difficult, especially to determine drainage area and well to well interference.

Fractured horizontal wells in shale plays exhibit a stimulated inner region within the fracture tips, and virgin reservoir outside of this region.

This behavior needs to be modeled correctly, so that the full effects of the boundaries of this stimulated region can be examined

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Approach

Model built by the semi-analytical method developed by Cinco-Let, et al. (1978) modified by Chen and Raghavan (1997).

This model uses multiple finite-conductivity fractures superimposed with a naturally fractured stimulated rock volume (SRV).

Using this model, we can emulate a composite reservoir, which can experience flow convergence beyond the SRV

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Early Conclusions

- Superimposing an SRV onto the virgin reservoir conditions may yield a reasonable approximation for the composite reservoir
- The accuracy of the approach depends on the flux distribution at the boundary of the composite regions.
- When the aspect ratio of the well to reservoir size and the permeability contrast between the composite regions increase, the accuracy of the approximation increases

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