

# NEAR-WELL CORRECTION METHOD FOR COMPLEX WELLS

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We present the near-well correction method (NWC) for improved flux and pressure calculation for the well-driven flows. The NWC method takes into account the singularity of the pressure near the well and introduces the non-linear (e.g. logarithmic) correction to improve accuracy of the flux discretization in the near-well region. For the isotropic case the linear-logarithmic reconstruction is used. Outside of the near-well region the NWC method is combined with the second-order nonlinear monotone two-point flux approximation scheme.

Numerical experiments for the simple cases of a single isolated well or several vertical wells show noticeable reduction of numerical errors compared to the nonlinear monotone FV scheme with the conventional Peaceman well model. For more complex cases we consider the multi-scale approach with the auxiliary radial-prismatic grids used to obtain the correction function.