

# Finite Volume Method Study Notes

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- Central differencing scheme
- Upwind differencing scheme is the most stable and unconditionally bounded scheme, but it introduces a high level of false diffusion due to its low order of accuracy (first-order).
- Hybrid differencing scheme.
- Quadratic upstream interpolation for convective kinetics (QUICK) scheme (Leonard, 1979).
- Total variation diminishing (TVD) scheme.

Higher-order schemes such as central differencing and QUICK can give spurious oscillations or 'wiggles' when the Peclet number is high. TVD scheme designed to address this undesirable oscillatory behavior of higher-order schemes. In TVD schemes the tendency towards oscillations is counteracted by adding an artificial diffusion fragment or by adding a weighting towards upstream contribution.

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