AMM Invariant Comparison: Design Trade-offs
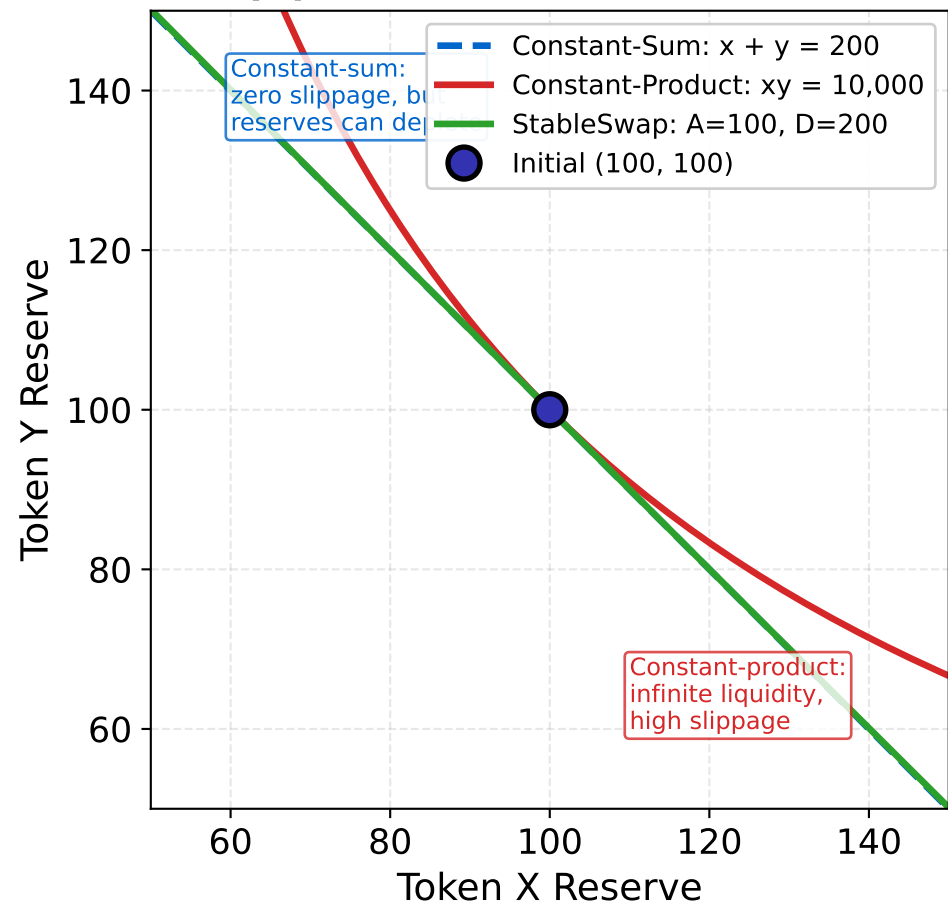**Egorov (2019): StableSwap achieves 100x lower slippage for pegged assets**

(a) AMM Invariant Curves

Constant-sum: zero slippage, but reserves can deplete

- Constant-Sum: x + y = 200
- Constant-Product: xy = 10,000
- StableSwap: A=100, D=200
- Initial (100, 100)

Constant-product: infinite liquidity, high slippage

(b) Effective Price vs Reserve Level

StableSwap sweet spot: near-zero slippage

- Constant-Sum (price = 1)
- Constant-Product
- StableSwap (A=100)

StableSwap interpolates between constant-sum (low slippage near peg) and constant-product (safety far from peg). Amplification A=100 controls curvature.