Unimod: a unified liquidity protocol

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Abstract. Unimod combines an n-asset automated market maker with isolated lending markets in a single non-custodial protocol: LP shares are the collateral asset, and both collateral valuation and the liquidation trigger are **oracle-free**, reading pool balances rather than prices. We describe the two pool topologies (Star and Delta), the swap pricing model, the per-asset health rule $b_i \leq \mathrm{ltv} \cdot s \cdot B_i$, and the restore-to-health in-kind liquidation that makes balance-tilt attacks unprofitable beyond the liquidation bonus.

1 Introduction

2 The AMM

2.1 Pool topologies: Star and Delta

2.2 Swap pricing model

2.3 LP shares and flash accounting

3 Oracle-free lending

3.1 Per-asset collateral valuation

$$b_i \leq \mathrm{ltv} \cdot s \cdot B_i, \quad s = \frac{\mathrm{userCollateral}}{\mathrm{totalLpShares}} \tag{1}$$

3.2 Interest rates

4 Liquidation

4.1 Restore-to-health, in-kind

4.2 Tilt-to-liquidate and why it fails

5 Security analysis

6 Conclusion

Bibliography

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