

Pricing Uniswap v3 LP Positions: Towards a New Options Paradigm?

TL;DR

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- Uni v3 LP positions can be decomposed into a short put payoff and a range component.
- The value of a Uni v3 position is the sum of 1) a short put, whose value is given by the Black-Scholes model, and 2) a range term, whose closed-form expression is found using the Feynman-Kac formula.
- This can be simplified further by converting the Uni v3 LP position into a “fixed-DTE” put option whose value at expiration converges to a put option at time $T_r > 0$.
- Comparing the expected returns and the options premium of a Uni v3 position can help determine whether it is more beneficial to hold a Uni v3 position or to “lend” it to an options buyer. Spoiler alert: It is almost* always better to lend a Uni v3 option