ZecYield

A receipt on the fee flow of ZEC, wherever it trades, settled on Robinhood Chain

zecyield.dev

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Abstract

Zcash has no decentralised exchange of its own. ZEC is bridged to Solana, NEAR, Base and BNB Chain and traded there in ordinary automated-market-maker pools, each of which charges a fee tier on every swap and credits it to the liquidity positions in range. ZecYield is a vault on Robinhood Chain that buys the *right to collect* those fees from liquidity providers for a term, pays them in ETH up front, and issues one ERC-4626 share, zYLD, over the whole basket; the tradeable zYLD token is a Pons v2 launch on the same chain. Basket weights are the non-negative loadings of the first principal component of the hourly fee matrix across every eligible pool, so the vault buys the part of each stream that moves with ZEC as a whole and not the part that is idiosyncratic to a venue. Net asset value is denominated in ETH and moves only by harvested fees; the price of ZEC never enters it. The vault therefore is long the number of times ZEC changes hands, not the price at which it does.

1 The cash flow

Let P be the set of pools in which ZEC (or a wrapped ZEC such as cbZEC) is one side of the pair, on any chain, that expose liquidity positions with separately collectable fee accrual. NEAR Intents is excluded: it settles solver quotes and has neither positions nor a fee tier. For pool $i \in P$ with fee tier ϕ_i (in basis points) and hourly volume $V_{t,i}$ in dollars, the fee that accrued to the pool's positions in hour t, in ETH, is

$$F_{t,i} \;=\; \frac{\phi_i}{10^4} \cdot \frac{V_{t,i}}{\pi_t},$$

where π_t is the dollar price of ETH, the vault's unit of account, in that hour. F is the fee matrix: hours by pools, up to 168 rows. Volume and price come from a cross-network indexer; the fee tier is read from the pool where it names one and taken from the venue's usual tier otherwise, in which case every figure derived from it is flagged.

2 The right

A liquidity provider holds two things: a position, which carries the principal and its impermanent loss, and a cash flow, which is the fee accrual on that position. ZecYield buys only the second. The provider delegates fee collection on the position to the vault's collector on that chain (an operator approval on Solana and Base, a delegated claim on NEAR) for a term T, and is paid m years of trailing fee flow in ETH up front. The registry on Robinhood Chain records the seller, the vault's

share $s \in (0, 1]$ and the term end. Each epoch the keeper claims the accrual, swaps it to ETH, bridges it to Robinhood Chain, and the registry splits it $s : (1 - s)$ between vault and seller in the same transaction. At term end the seller revokes the delegation.

The vault never custodies the position, so it never carries the principal's price. If the provider withdraws liquidity mid-term the stream stops, the registry drops the pool after three silent epochs, and nothing the vault paid for was ever in anyone else's custody.

3 Eligibility

A pool enters the basket when four gates are clear: it is an AMM position (not an intent), its fee tier is known or defaulted and flagged, its depth is at least 25 ETH, and it has at least seven days of trading history. Reserve figures above two hundred million dollars are treated as indexer artefacts and excluded.

4 The spectrum

Standardise each column of F so that a large pool does not masquerade as a correlated one, $Z = (F - \mu)/\sigma$, take the covariance $\Sigma = Z^\top Z/(n - 1)$, and its top eigenpair (λ_1, v_1) by power iteration with deflation. Weights are $w = \max(v_1, 0)/\|\max(v_1, 0)\|_1$: negative loadings get zero, never a short.

$\lambda_1/\operatorname{tr}\Sigma$ is the share of fee variance explained by one factor. When it is high, one thing moves every venue on every chain at once, and that thing is the market's interest in trading ZEC. It is purchasable, pool by pool, through the rights above. Everything after λ_1 is single-venue noise, and the vault does not pay for it. Weights decide where newly harvested ETH goes when the vault buys more rights, not what it already owns.

5 Net asset value

One share is one ETH at genesis. Let A_e be the vault's WETH at epoch e and S_e the outstanding zYLD; $\mathrm{NAV}_e = A_e/S_e$. A harvest H_e enters A linearly over the following epoch (Yearn-style locked profit), so a deposit one block before a harvest cannot capture fees earned by other people's capital. A performance fee of 10% of each harvest goes to the treasury and a fixed 0.002 ETH tip to the keeper who calls it; there is no management, deposit or withdrawal fee. The genesis notional is trailing annual fee flow times $m = 1.5$ years, the one modelled assumption in every yield figure the site shows.

6 The contracts

Two contracts on Robinhood Chain mainnet (an Arbitrum Orbit L2 settling to Ethereum, chain id 4663, gas in ETH). **ZecYieldVault** is an ERC-4626 over WETH with native-ETH deposit and redeem wrappers, an epoch `harvest`, the performance fee, linear vesting and an eigen-weighted `reinvest`. **FeeRightsRegistry** records each right (seller, share, term), enforces the gates, receives each stream's bridged harvest through a pluggable encoder and splits it between vault and seller. A

Foundry suite of 91 tests covers the gates, the split, the vesting, the sandwich, reclaim after term and a reentrant seller. Both are unaudited.

The zYLD *token* is a separate Pons v2 launch on the same chain and trades on its own locked pool; it shares a ticker with the vault share and nothing else.

7 The crash

Holding ZEC is long price; the dollar value of a ZEC position through a 30% dump is 70% of what it was. The vault's NAV in ETH through the same dump is

$$\mathrm{NAV}_{e+1} = \mathrm{NAV}_e \left(1 + H_e/A_e\right),$$

and H_e is a cut of volume, which on a dump day is the highest it will be all quarter. The coin falls; the vault is paid.

8 Risk

Worst first. **Bridges**: income is earned on four chains and settles on Robinhood Chain, every harvest crosses a bridge, and a bridge can be paused or drained; the vault holds at most one epoch of fees on a source chain, so the exposure is a day of fees, not the principal. **Silence**: if ZEC goes quiet everywhere at once, harvests shrink toward zero and NAV goes flat; it does not fall, but flat is not free. **Contracts**: the vault, the registry and Pons v2 are unaudited. **Price**: structurally low, because the vault holds claims and never positions.

9 Zcash facts relied on

Proof of work, Equihash. Block spacing 75 s since Blossom (ZIP-208). Subsidy after the November 2024 halving 1.5625 ZEC per block, split 80% miner, 8% Zcash Community Grants, 12% lockbox (ZIP-1015, ZIP-1016); next halving at block 4,406,400. Fees per ZIP-317: 5,000 zatoshi per logical action with a grace of two. Shielded pools: Sprout (exit only), Sapling, Orchard (sealed by NU6.3 on 28 July 2026 after the Orchard circuit fix in NU6.2) and Ironwood, the formally verified pool that NU6.3 opened. Coinbase outputs may be shielded since Heartwood (ZIP-213), which is why the ledger computes the miner's take from the subsidy rule rather than from transparent outputs.