

How we can block sand-baggers and smurfs without killing on-boarding

We need a defence that is **friction-graded**:

* zero friction for casuals

* increasing friction and transparency the more money a player tries to risk or withdraw.*

Below is an approach proven in real-money chess sites and poker rooms, adapted for on-chain play.

Layer	What it does	Implementation details	Effort
1. Provisional rating gate	New wallets start provisional ; K-factor = 64 and max stake = 0.05 SOL.	<ul style="list-style-type: none">• ELO stored in PDA with flag <code>isProv</code>.• <code>createMatch()</code> checks <code>stake <= provStakeCap</code>.	Already in roadmap (low).
2. Rolling performance check	If a player's win-rate vs. equal/-better ELO > 70 % over last 20 games or Stockfish accuracy > 85 % at 1400 ELO → auto-flag for review.	<ul style="list-style-type: none">• Lambda/cron reads match logs.• Flag stored in PDA; when flagged, stake cap drops to 0.02 SOL until cleared.	Medium (Node script).
3. Stake-tier KYC	To stake > 0.2 SOL per match or withdraw > 1 SOL/day , wallet must pass Fractal ID (photo + liveness).	<ul style="list-style-type: none">• Link Fractal token to PDA.• Cursor-generated React modal.	Medium; Fractal provides SDK.
4. Device-fingerprint binding	First login hashes (<code>browser UA + canvas + WebGL + IP block</code>) into Reputation SBT (Soar achievement). Same device hash required for future logins at that wallet.	<ul style="list-style-type: none">• Soar "soulbound achievement" mint if not present.• Client compares fingerprint each session.	Medium-low; Soar JS helper.

5. Cross-wallet pattern detection	If two wallets share ≥ 2 fingerprints (IP + canvas) and high win-rate transfer SOL between them \rightarrow both accounts suspended.	<ul style="list-style-type: none"> • Nightly SQL+Python job on ClickHouse log table. • Manual review queue (Telegram bot). 	Medium; code once.
6. ELO floor & decay	ELO cannot drop below current floor – 200 ; inactive > 30 days \rightarrow soft decay – 10 pts/week (prevents tanking then hiding).	<ul style="list-style-type: none"> • ELO PDA stores floor. • Decay cron job. 	Low.
7. Public ban list	On-chain PDA bannedAccounts ; UI shows “⚠️ This player is flagged.”	<ul style="list-style-type: none"> • createMatch() rejects banned keys. • Admin signer only. 	Low.

💡 **Why this works:**

- **Small stakes remain frictionless** – casuals can pop in.
- **High stakes become identity-bound** – Sybil cost skyrockets.
- Automated flags catch most smurfs before they farm ◀️ 1500 players.