

$$L := \{(G_1, G_2) : \\ G_1 \cong G_2\}$$

ρ knows
 $G \in S_n$

$\sigma: G_1 \rightarrow G_2$ is an isomorphism.

- P1) Sample $\pi \leftarrow S_n$ and send $\pi(G_1) := M$.
- V1) Sample $b \leftarrow \{1, 2\}$ and send b .

- P2) If $b = 1$, send π .
If $b = 2$, send $G \cdot \pi^{-1}$.

$\forall x \in L: \Pr_{\sigma}[\text{reject}] \leq \frac{1}{2}$
 $M \times F, M$ can't be isomorphic
to both G_1 and G_2

Protocol completeness ✓

Protocol soundness ✓

- V2) \checkmark checks if the permutation π
works.

sends $\pi(G_1) = M$, output ACCEPT.

If $b = 1$, $\pi(G_1) = G_2$, output ACCEPT.

$$Hb = \mathcal{N}(G \cdot \pi)$$

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P1) Sample $\pi \in S_n$ and send $\pi(G_1) = M$.

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$$\text{days} / 2 = 1 \text{ ft}$$

v_2) ✓ checks if the permutation

Since "works", $\pi(G) = M_1$, output "ACCEPT".

$$H = \mathbb{Z} \cdot g$$

Sounds ✓
 VQL: VQL*:
 $P(\text{V accents}) \leq \frac{1}{2}$

A photograph of a young man with curly brown hair, wearing a white t-shirt and blue shorts, sitting on a couch and reading a newspaper. He is barefoot and wearing flip-flops. The couch has a textured, light-colored fabric.

$$\mathcal{L} := \left\{ (G_1, G_2) : \begin{array}{l} G_1 \cong G_2 \\ \exists \pi \in S_n \end{array} \right\}$$

① Picked 2k

$$G_1 \cdot G_2$$

ρ knows
 $\tilde{\sigma} \in S_n$

$\tilde{\sigma} : G_1 \rightarrow G_2$ is an isomorphism.

$\forall x \in$

$\text{HPPV}^* : \mathcal{G}$ expected PPT S^* .

- 1) Sample $\pi \in S_n$ and send $\pi(G_1) = M$.
- 2) Sample $b \in \{1, 2\}$ and send b .

2) If $b=1$, send π .

If $b=2$, send $G \cdot \pi^{-1}$.

S^* gets $\sqrt{^*}$'s code.

(2) $\text{HPPV}^* : \text{HPPTS}^* : \forall x \in$

$\rightarrow \mathbb{P} \left[S^*(x) = \perp \right] \leq \frac{1}{2}$

$\rightarrow \mathbb{P} \left[S^*(x) = \alpha \right] = \mathbb{P} \left[S^*(x) = \perp \right]$

- 2) \checkmark checks if the permutation ρ works.
- 3) \checkmark $\tau(G_1) = M$, output "ACCEPT".

If $b=1$, $\tau(G_1) = M$, output "ACCEPT".

If $b=2$, $G \cdot \pi^{-1}(M)$.

$\langle \varphi_1 \sqrt{x}, \psi \rangle \equiv S^*(x)$