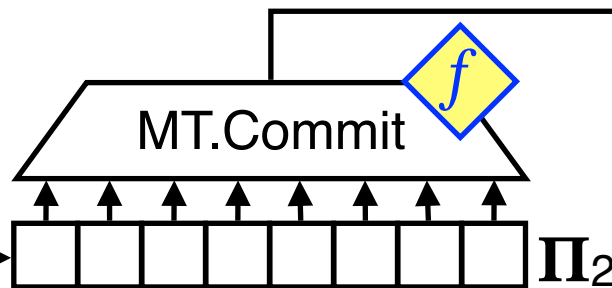
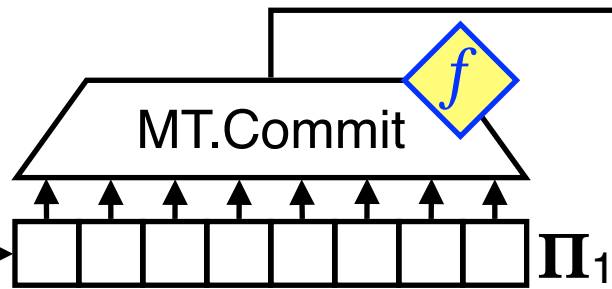
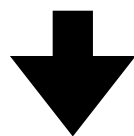
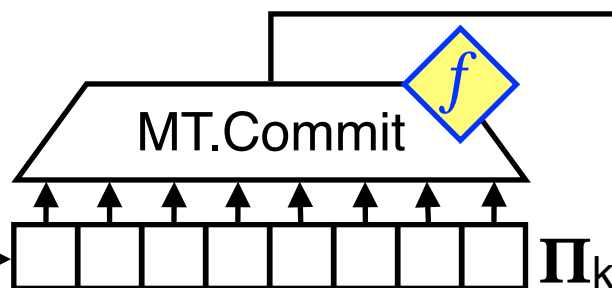


$\mathcal{P}(\mathbb{X}, \mathbb{W})$
 $\mathbf{P}_{\text{IOP}}(\mathbb{X}, \mathbb{W})$

 \vdots


IOP verifier queries: (Q_1, \dots, Q_k)
 IOP oracle answers: $(\mathbf{a}_1, \dots, \mathbf{a}_k)$
 MT proofs: $(\text{pf}_1, \dots, \text{pf}_k)$

 rt_1
 ρ_1
 rt_2
 ρ_2
 \vdots
 rt_k
 ρ_k
 $((Q_i, \mathbf{a}_i, \text{pf}_i))_{i \in [k]}$
 $\mathcal{V}(\mathbb{X})$

- sample IOP randomness ρ_1

- sample IOP randomness ρ_2

 \vdots

- sample IOP randomness ρ_k

- check MT proofs

 $\bigwedge_{i \in [k]} \text{MT.Check} \diamond_f (rt_i, Q_i, \mathbf{a}_i, \text{pf}_i)$

- check IOP decision

 $\mathbf{V}_{\text{IOP}}^{[Q_i, \mathbf{a}_i]_{i \in [k]}}(\mathbb{X}, (\rho_1, \dots, \rho_k))$