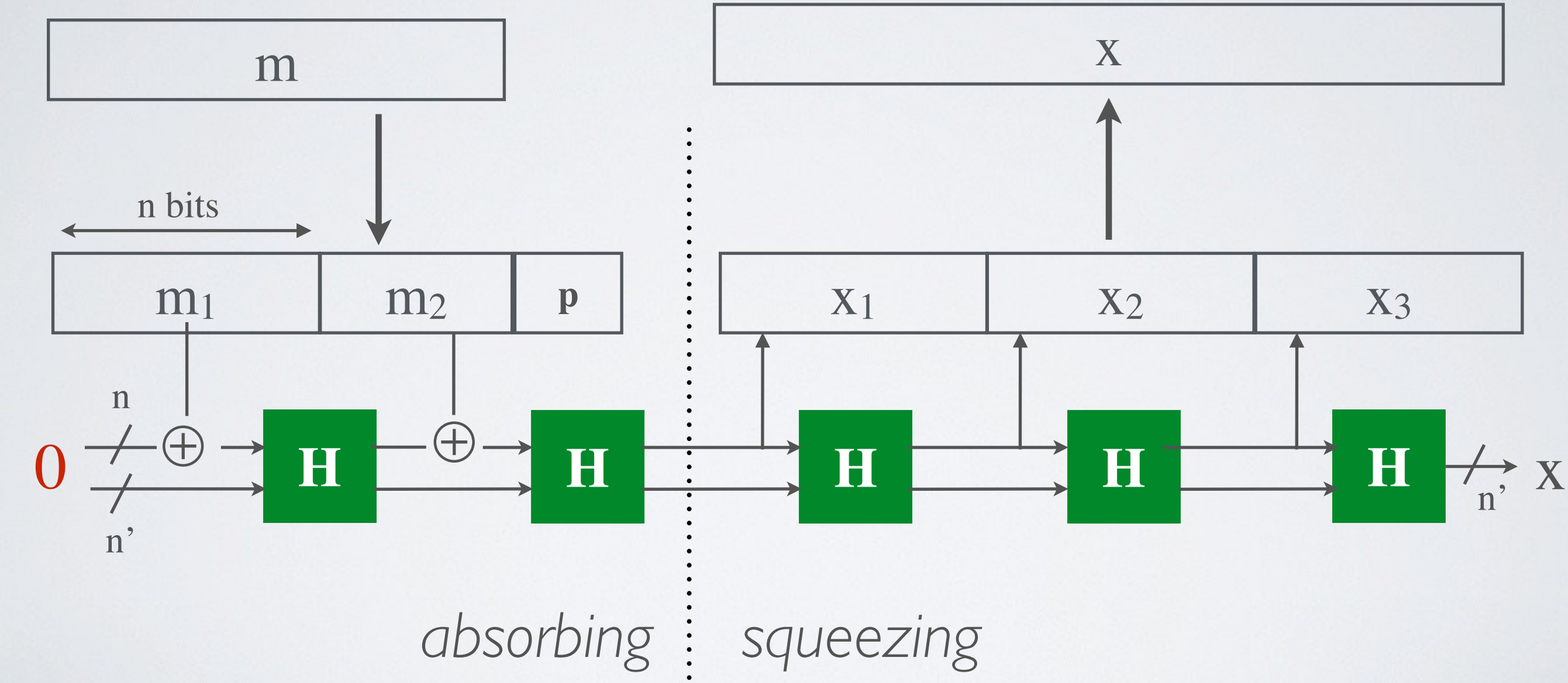
How to hash long messages ?

Sponge construction (SHA-3)

split $\mathbf{m}$ in blocks of $\mathbf{n}$ bits
and add padding $\mathbf{p}$

assemble the hash



Property : if $\mathbf{H}$ is CR then Sponge is CR

Security of hash functions