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To: [internal-pqc](#)
Subject: Strong binding
Date: Saturday, October 9, 2021 3:37:24 PM

Everyone,

Off the top of my head, wouldn't every scheme have strong binding except SPHINCS+? With SPHINCS+, the signer could find M, M' such that $\text{sign}(\text{PK}, M) = \text{sign}(\text{PK}, M')$, since the signer knows the prefix/randomization for the hash. And really, this is just a design decision—accepting that the signer could create such collisions lets you shrink the signatures by about a factor of two. Are there any other schemes that only sign (say) a 128-bit randomized hash for Level 1 security?

--John