

Asymmetric encryption for integrity

Alice encrypts a message m with her private key K_{s_A}

➔ Everybody can decrypt m using Alice's public key K_{p_A}

✓ Authentication with non-repudiation (a.k.a Digital Signature)







KsA, KpA

KpA

KpA

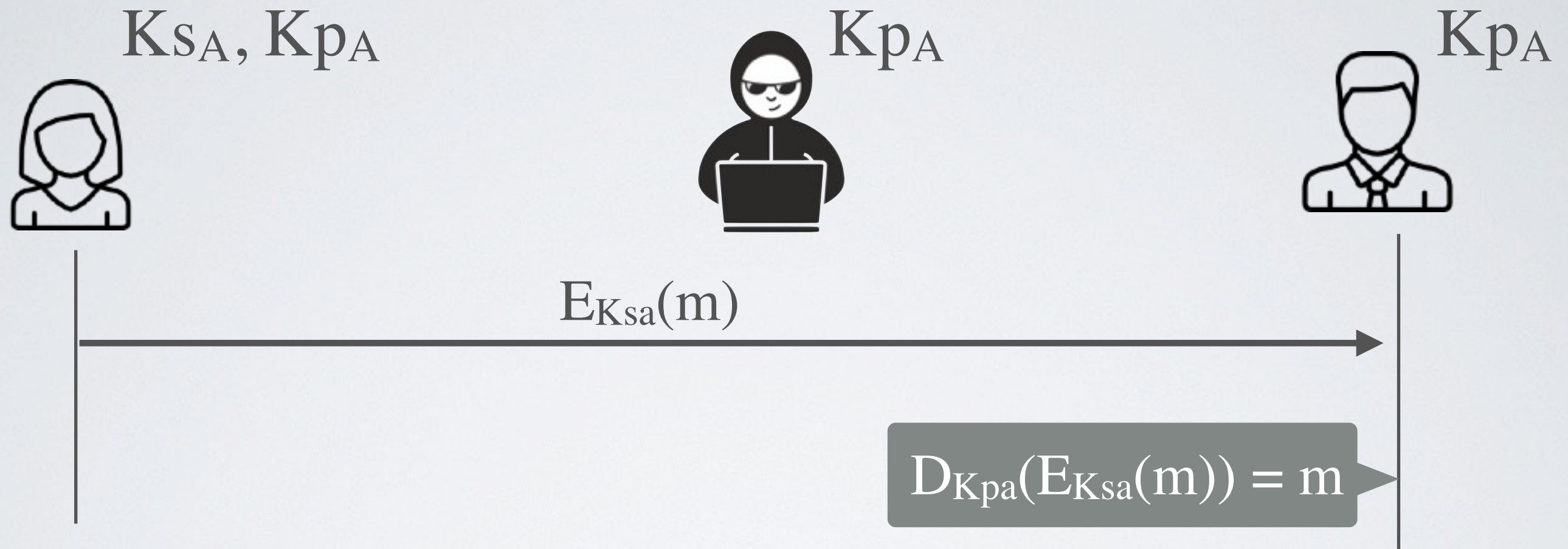





$$E_{Ksa}(n)$$

$$D_{Kpa}(E_{Ksa}(m)) = m$$

Asymmetric encryption for **integrity**



Alice encrypts a message m with her private key K_{SA}

➔ Everybody can decrypt m using Alice's public key K_{PA}

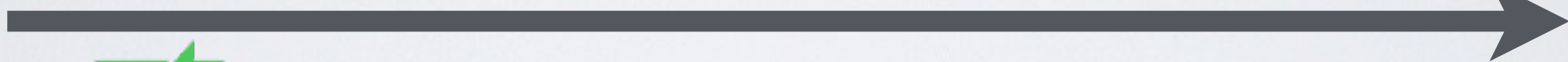
✓ Authentication with non-repudiation (a.k.a Digital Signature)

Digital Signature

K_{sa} Alice's Secret Key



K_{pa}, K_{pb} public keys



K_{sb}

➡ Use public cryptography to **sign and verify**

$$m \parallel \text{SIG}_{K_{sa}}(m)$$

$$\text{SIG}_{K_{sa}}(m) = E_{K_{sa}}(H(m))$$