

Asymmetric encryption

Bob encrypts a message m with Alice's public key K_{p_A}

➔ Nobody can decrypt m , except Alice with her private key K_{s_A}

✓ Confidentiality without the need to exchange a secret key







KsA, KpA

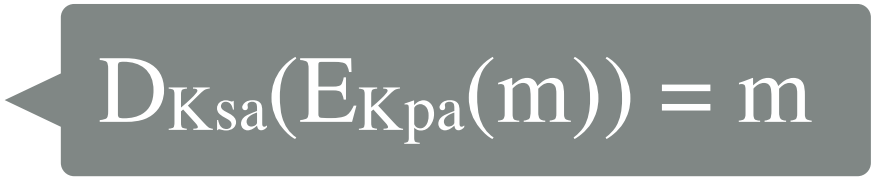
KpA

KpA

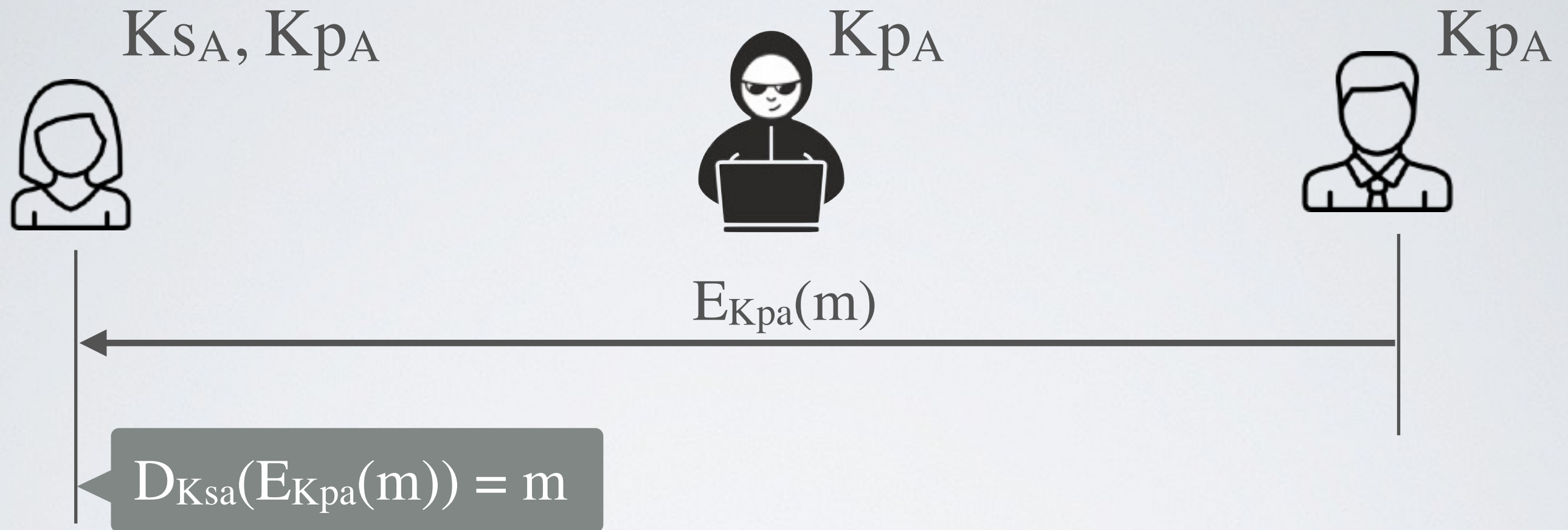





$$E_{K_{pa}}(n)$$


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

Asymmetric encryption for **confidentiality**

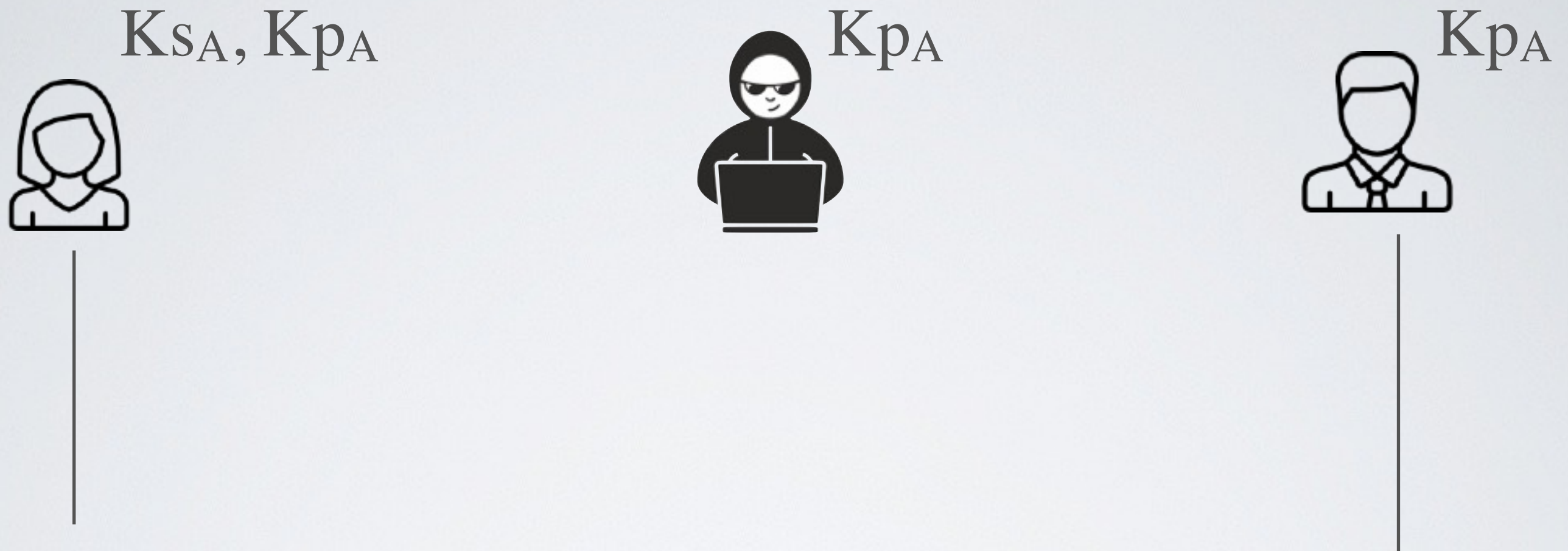


Bob encrypts a message m with Alice's public key K_{PA}

➔ Nobody can decrypt m , except Alice with her private key K_{SA}

✓ Confidentiality without the need to exchange a secret key

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)