

# Alice's Polarization Encoding

# Bob's Projective Measurement

photon polarization		basis $X$	
		0 $\leftrightarrow$	1 $\times$
bit $A$	0	H $\leftrightarrow$	D $\nearrow$
	1	V $\downarrow$	A $\searrow$

$B$		basis $Y$	
		$\leftrightarrow$	$\times$
photon polarization	$\leftrightarrow$	0	?
	$\downarrow$	1	?
	$\nearrow$	?	0
	$\searrow$	?	1

## Alice

bit $A$	1	0	1	1	0	0	1	0	1	0	1	0
basis $X$	0	1	0	1	0	1	1	0	0	1	0	0
photon polarization	$\downarrow$	$\nearrow$	$\downarrow$	$\searrow$	$\leftrightarrow$	$\nearrow$	$\searrow$	$\leftrightarrow$	$\downarrow$	$\nearrow$	$\downarrow$	$\leftrightarrow$

## Bob

via quantum channel												
basis $Y$	1	1	0	1	0	0	0	0	1	0	0	1
measured polarization	$\times$	$\times$	$\leftrightarrow$	$\times$	$\leftrightarrow$	$\leftrightarrow$	$\leftrightarrow$	$\leftrightarrow$	$\times$	$\leftrightarrow$	$\leftrightarrow$	$\times$
result $B$	$\frac{0}{1}$	0	1	1	0	$\frac{0}{1}$	$\frac{0}{1}$	0	$\frac{0}{1}$	$\frac{0}{1}$	1	$\frac{0}{1}$
basis comparison	$\times$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\times$	$\times$	$\checkmark$	$\times$	$\times$	$\checkmark$	$\times$
final key		0	1	1	0			0			1	

via classical channel

$X = Y ?$