

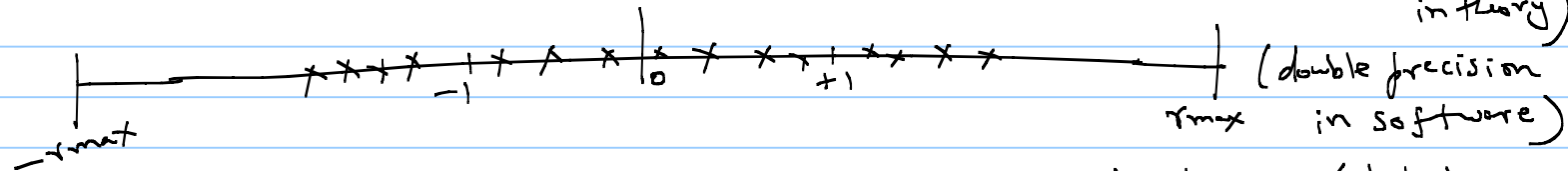
BPSK:  $0 \rightarrow +1$   
 $1 \rightarrow -1$

Received value:  $r = s + n$

$+1 \text{ (or)} -1$   
 $\downarrow$   
 $s$

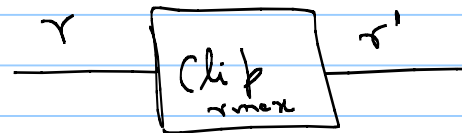
$\nwarrow$  Gaussian  
mean: 0  
var:  $\sigma^2$

$r$ : real value (infinite precision in theory)



hardware: 6 bits per received value

$r_{max}$ : 3 (or 4)



$$r' = \begin{cases} r, & \text{if } -r_{max} < r < +r_{max} \\ -r_{max}, & \text{if } r < -r_{max} \\ r_{max}, & \text{if } r > r_{max} \end{cases}$$

$r'$ : quantized to 6 bits

1 bit: sign

5 bits: magnitude

maxint = 31

Quantized value

$$\text{int} \left( \frac{r'}{r_{max}} \times \text{maxint} \right)$$

integers from -31 to 31