#### Thy information theorist neighbor

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Topic Why not Polar codes With the master in audience?

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Topic Why not Polar codes With the master in audience? Binning via card tricks Who cares? / some other time

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How to gamble

Topic Why not Polar codes With the master in audience? Binning via card tricks || Who cares? / some other time

TopicWhy notPolar codesWith the master in audience?Binning via card tricksWho cares? / some other timeHow to gambleUs? Never.

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How to gamble Us? Never. Multi-user IT

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• Information theory is an engineering subject.

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- Is attractive to mathematically inclined engineers (and vv).
- Such combinations can be a blessing and a curse...
- IT has been lucky in having level-headed seniors.

• Shannon publishes A mathematical theory of communication in the BSTJ.

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- The same week he sends to the Proc. IRE *Communication in the presence of noise*.
- Says: go digital.
- Takes a while to sink in



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### $C = W \log(1 + P/N_0 W)$

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# Short history of wireless progress $_{\rm Acts \ II, \ III}$



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 Problem: Would like to operate at 30, 40, 50 b/s/Hz

• but at the same power as now.



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- Can we cheat the red curve?



- Problem: Would like to operate at 30, 40, 50 b/s/Hz
- but at the same power as now.
- Can we cheat the red curve?
- Call IT engineering to

SNR (dB) rescue.

#### Why is your access point sprouting ugly sticks?

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• Information theory is not just a playground in the sky.

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• (But we do have fun.)

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- (But we do have fun.)
- Good theoreticians try to remember practice.

• Information theory is not just a playground in the sky.

- (But we do have fun.)
- Good theoreticians try to remember practice.
- Keep your feet on the ground, head in the fun.