High speed data transmission

Authors: Antonio Pellegrino, Mauricio Feo
Instructors: Antonio D’Amico, Enrico Jr. Schioppa

<table>
<thead>
<tr>
<th>ROOM:</th>
<th>Building XXX, Room YYY</th>
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<tbody>
<tr>
<td>CLASS HOURS:</td>
<td>2:30-5:00 MON - FRI; 2:00-4:30 SAT</td>
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<td><a href="mailto:antonio@nikhef.nl">antonio@nikhef.nl</a> <a href="mailto:mfeo@nikhef.nl">mfeo@nikhef.nl</a> (organizers) <a href="mailto:enrico.junior.schioppa@cern.ch">enrico.junior.schioppa@cern.ch</a> <a href="mailto:adamicco@nikhef.nl">adamicco@nikhef.nl</a> (instructors)</td>
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Data transmission in high energy physics: the LHC example

- Average (not peak!) data transmission rate ~ O(Gbps)
- Going towards high-luminosity LHC (one order of magnitude)
- LHC is certainly not the only example...
Data transmission: all you need to know for this lab

IDEAL:

TRANSMITTER

RECEIVER

REAL:

TRANSMITTER

RECEIVER

Eye diagram

Bit error rate

0110001011
0010101001

= 0.3 or 30% BER
Lab setup

LHCb mini-DAQ system

Transmitters/receivers

FPGA