Comparison of MATLAB code with PIE-D

plus comparison of filtering options

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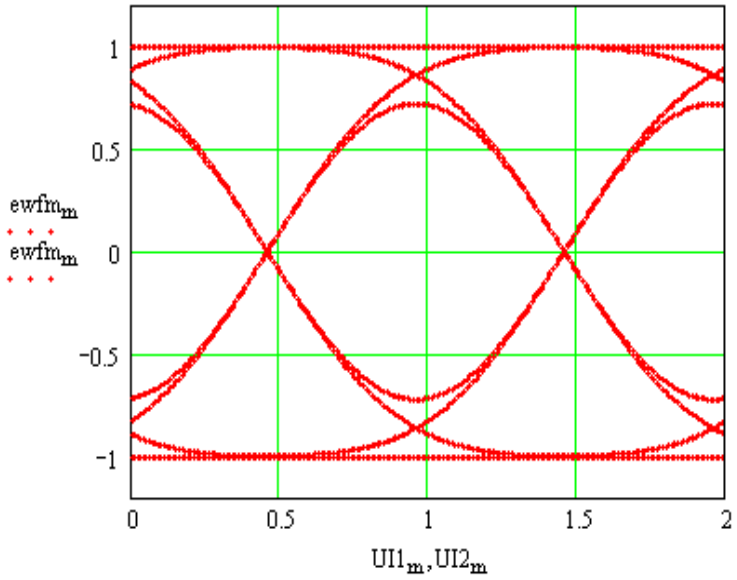
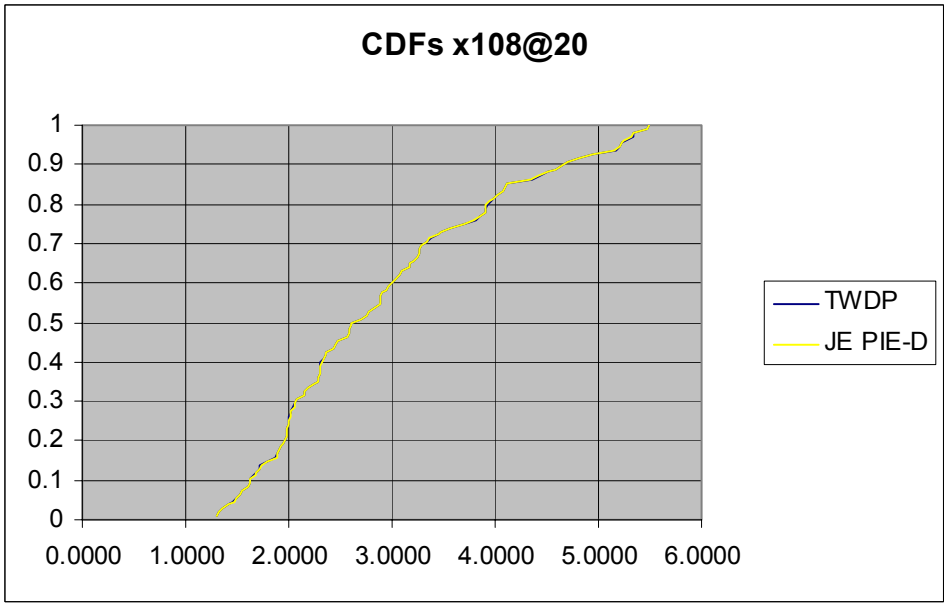
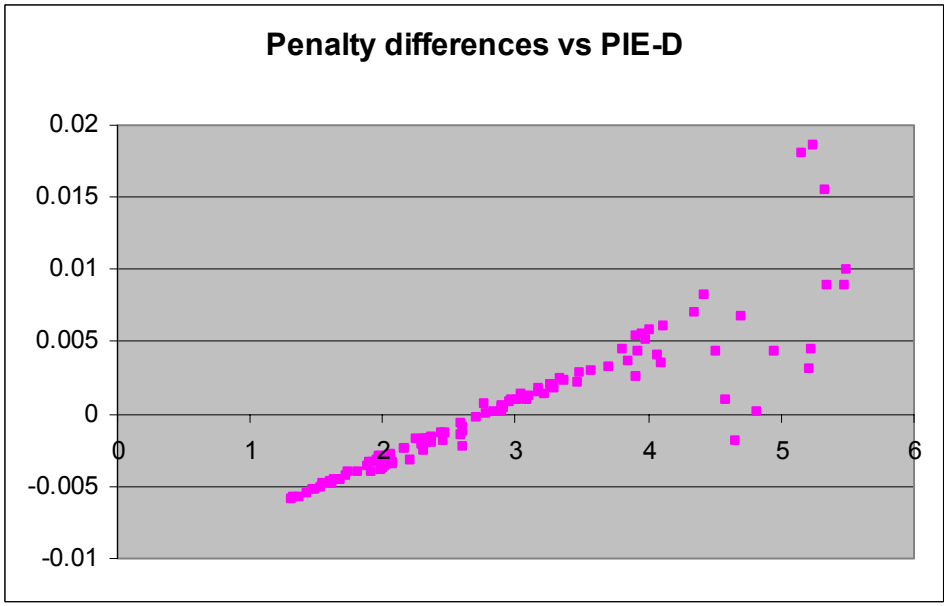
TWDP code comparison vs. PIE-D

- CDF comparison of code to John Ewen PIE-D data
- Comparison based on
  - 47.1 psec 20-80% Gaussian prbs9 simulated waveform
  - 7.5 GHz BT4 filter on capture
  - Cambridge r2.1 (108 comparisons)
  - 20 micron fixed offset launch
  - No connectors



Comparison results
Jan 17





Within 0.02 dB; negative differences probably explained by round-off errors in PIE-D, simulated waveform, or elsewhere.

Filter configurations
108 fibers x 3 offsets

- Configurations
  - "Filter" (current code)
    - Signal → BT-4 @ capture +Butterworth;
      - Noise →Butterworth
  - "No filter" (no *additional* filter for signal)
    - Signal → BT-4 @ capture;
      - noise → BT-4
- "No filter" improves penalty ~0.17 dB
  - Systematically better than PIE-D
  - BT-4 filter reduces integrated noise vs. PIE-D assumption of white noise
- Recommend staying with original option to match history of PIE-D