1035-O1-1723   **Peter M. Jarvis*** (`p.jarvis.ee.math@gmail.com`). *Longer Hamming Codes Are Better Over BPSK Channels.* Preliminary report.

Simulations of Hamming error correcting codes of lengths [7,4], [15, 11], [31, 26] and [63, 57] show increasingly better error control performance over an additive white Gaussian noise channel when binary phase shift keying is used for transmission. This may seem counterintuitive, as all these codes are only single error correcting perfect codes, so that more 2 or more tranmit errors cause an incorrect decoding. Longer codes would seem to be more likely to receive 2 or more erroneously transmitted bits. However, a probabilistic analysis predicts the simulated behaviour. The better performance of the longer codes results from their higher code rates, which reduces the probability of channel transmission error. (Received September 20, 2007)