

1096-VN-628 **Bud Brown*** (ezbrown@math.vt.edu), Math Department (0123), 225 Stanger Street, Blacksburg, VA 24061. *Connections between Hamming codes over q -element fields and Singer block designs.*

The first error-correcting codes developed, and the first ones students usually encounter, were efficient ways to detect and correct errors in binary strings by including parity-check bits along with the message bits. Hamming's scheme produced perfect single-error correcting codes – they correct all single-error patterns and only those patterns. Subsequent researchers described such codes for character strings over arbitrary q -element fields, now known as q -ary Hamming codes. We show how to construct such codes, and describe their connections with so-called Singer block designs.

Remember $(q^k - 1)/(q - 1)$, because it's important. (Received September 08, 2013)