

Better CRC Codes for the Internet

Anton Betten*, Kuwait University

CRC Codes are used to detect communication errors, for instance in TCP/IP Internet traffic. The standard is CRC32, which adds a 32 bit checksum to the information packet. It has been observed by Partridge et.al. that certain errors may slip by this check sum, leading to corrupt data transfer. We will present some ideas for better checksums. Our approach is based on BCH-codes over extension fields in characteristic two. Just like the old check, our new check sum can be implemented easily with low level bit oprations. The only difference is that we precompute a certain table which results from all multiples of the polynomial over the extension field. The check sum will be longer, leading to a slightly lower information rate, but the error detection is significantly stronger, in particular for the type of errors that appear frequently.

Keywords: CRC error check, Internet, coding theory, TCP/IP.