An introduction to algebraic geometry codes with applications on asymptotic theory of codes

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In the first part of the talk I will recall some fundamental facts from the theory of curves over finite fields together with Goppa construction of algebraic geometry codes. In the second part I will give some applications to the asymptotic theory of codes. Namely for a prime power q, let α_q be the standard function in the asymptotic theory of codes, that is, $\alpha_q(\delta)$ is the largest asymptotic information rate that can be achieved for a given asymptotic relative minimum distance δ of q-ary codes. I will report on some of our joint results with Harald Niederreiter on lower bounds of $\alpha_q(\delta)$.