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Abstract : This paper considers a method for evaluation of Rate–Distortion–Complexity (R–D–C) performance of video coding. A statistical model of the transformed coefficients is used to estimated the Rate–Distortion (R–D) performance. A model frame work for rate, distortion and slope of the R–D curve for inter and intra frame is presented. Assumptions are given for analyzing an R–D model for fast R–D–C evaluation. The theoretical expressions are combined with H.264 video coding, and confirmed by experimental results. The complexity frame work is applied to the integer motion estimation.