Multiple-antenna techniques have been recognized to be capable of greatly increasing the spectral efficiency of wireless systems. For this reason, a considerable research effort is being spent to design space--time codes that approach the impressive values of channel capacity available. A major research goal is the reduction of the complexity of optimum decoding: in fact, maximum-likelihood receivers exhibit a complexity that grows exponentially with the modulation size and the number of antennas, and becomes quickly impractical as either parameter is large. Thus, in addition to searching for good space--time codes, it is important to seek receiver interfaces that achieve a close-to-optimum performance while keeping a moderate complexity: this would remove the practical restriction to small signal constellations or few antennas.

Suboptimal receiver interfaces may include linear filters, successive cancellations of spatial interference, or sphere decoding. In particular, iterative spatial-interference cancelers, combined with space--time codes, provide a good tradeoff between complexity and performance. In this talk we describe the general class of iterative receivers that combine a soft decoder for a space—time code with a spatial-interference canceler. The performance of these receivers can be described using EXIT charts, a graphical tool that allows one to study the convergence of the iterative algorithms, and to derive design guidelines.