Finding a maximum-size stable set in a graph is a hard problem. A special case is finding maximum-size error-correcting codes, where the graphs have even exponential size. Delsarte and Lovász gave good upper bounds, using linear and semidefinite programming.

Alexander Schrijver extends these methods with tools from representation theory and C*-algebra, yielding sharper code bounds. For instance, it gives $A(20,8) = 256$, that is, the maximum number of 0,1 words of length 20 any two of which have Hamming distance at least 8, is equal to 256. In other words, the quadruply shortened Golay code is optimum.

In the talk he gives an introduction to the methods and results. Joint work with Dion Gijswijt and Hans Mittelmann.