选择以下主题之一，查找有关资料，进行仿真，撰写学术论文一篇。

（1）Try out the exercises proposed in this course.

（2）Implement a 2x2 scheme using dominant eigenmode transmission. How does it compare with the Alamouti scheme?

（3）If the number of transmit antennas is fixed and we increase the number of receive antennas, the margin of coding gain increases. Prove this statement using the generator codes given in Section 5.4.5. Remember the rule, that the higher the trace value with multiple receive antennas, the better the performance, regardless of the rank and determinant of other codes.

（4）Figure 5.13 shows the performance of a 4-state 4PSK code on slow Rayleigh fading channels with two transmit and two receive antennas and imperfect channel estimation using MMSE. Repeat this exercise using a 16-state 4PSK code.

（5）Figure 5.14 shows the performance of 4PSK codes in the presence of correlation between receive antennas. Check out the performance using higher trace codes from the tables given in Section 5.4.5. How do STTC codes compare with STBC codes from the point of view of robustness in the presence of correlation?

（6）Plot the MMSE curves for V-BLAST with a correlation of 0.6. How does this curve compare with a MMSE curve with no correlation.

（7）Implement the V-BLAST algorithm in the OFDM-based packet simulator using the MMSE method.

（8）Simulate the V-BLAST algorithm using receiver correlation technique for a 2x4 system. Modify the GUI accordingly with a receive correlation check-box. Why is the performance so poor?

（9）Study the performance of the LSE as well as FFT estimation techniques using the simulator provided with this chapter. Modify it to incorporate block/convolutional coding and compare the performance.

（10）Please try any hot MIMO technology.