



**FIGURE 6.20 Roofline models of two generations of Opterons.** The Opteron X2 roofline, which is the same as in Figure 6.19, is in black, and the Opteron X4 roofline is in color. The bigger ridge point of Opteron X4 means that kernels that were computationally bound on the Opteron X2 could be memory-performance bound on the Opteron X4.