

**FIGURE 4.15**

Fresnel diffraction patterns at different distances from a square aperture. Distance increases as the Fresnel number N_F shrinks. The size of the original rectangular aperture is indicated by the shaded boxes.

Attention is called to the fact that, as the observation plane approaches the plane of the aperture (N_F becomes large), the Fresnel kernel approaches the product of a delta function and a factor e^{jkz} , and the shape of the diffraction pattern approaches the shape of the aperture itself. In fact, the limit of this process is the geometrical optics prediction of the complex field,