Copy of a printed graph referenced as "Rectangular aperture"

Contributors

Fuller, Watson, 1935-

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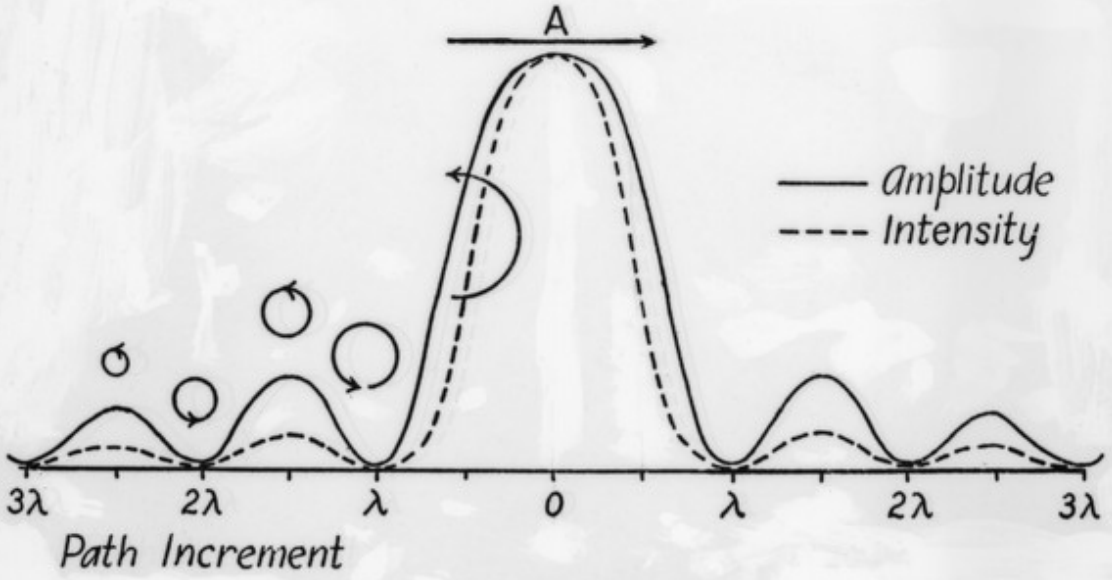
above explained, are approximate positions. There is a slight correction to be made.)

We shall now determine the value of the ordinate of the amplitude curve at the various key positions shown in Figure 83. Let the vector A represent the vibration curve which obtains at the center of the pattern. The ampli-



Rectangular aperture

tude of illumination at this point is thus to be represented by a magnitude A. The length A will also be the length of arc of the remaining vibration curves. Therefore, at the point halfway to the first minimum, where the vibration curve is a semicircle of length of arc A, the amplitude, the length of the closing vector, will be $2A/\pi$. The next key position is the first minimum. Here the ordinate is zero (and it is also zero at the succeeding minima). At the first lateral maximum the vibration curve is a circular arc of length A which has made one and one-half convolutions. The amplitude of illumination at this point is hence $2A/3\pi$. Similarly, at the second lateral maximum the amplitude is $2A/5\pi$—and so forth.*

In Fraunhofer patterns the central field point is always by far the most intensely illuminated point of the field. In contradistinction, in the Fresnel pattern, arising, for example, from a slit, the central point of the pattern may