uniform currents component, to eliminate the singularity.

Where D is the diffraction coefficient of equivalent currents, currents component is mapped to the diffraction coefficient, we can get the expression of being eliminated the singularity:

$$D_{11} = D_m - D_m^{PO}$$
$$D_{22} = D_e - D_e^{PO}$$
$$D_{21} = D_{em}\sin\beta_i - D_{em}^{PO} \qquad (5)$$

Where,the integration of uniform-geometrical method of diffraction and method of equivalent currents is[12]:

$$\begin{bmatrix} E_Z^d \\ \eta_0 H_Z^d \end{bmatrix} = \frac{e^{-jk\rho}e^{-jkz\cos\beta_0}e^{-j\frac{\pi}{4}}}{2n\sqrt{2\pi k_t\rho}}\left\{\begin{bmatrix} D_e(\pi+n/2-\phi) \\ D_m(\pi+n/2-\phi) \end{bmatrix}\right.$$
$$\times\left(\cot\frac{\pi-(\phi-\phi_0)}{2n}F\{k_t\rho[1+\cos(\phi-\phi_0)]\}\right.$$
$$\left.-\cot\frac{\pi-(\phi+\phi_0)}{2n}F\{k_t\rho[1+\cos(\phi-\phi_0)]\}\right)$$
$$\left.+\begin{bmatrix} D_e(-\pi+n\pi/2-\phi) \\ D_m(-\pi+n\pi/2-\phi) \end{bmatrix}\left(\cot\frac{\pi+(\phi-\phi_0)}{2n}-\cot\frac{\pi+(\phi+\phi_0)}{2n}\right)\right\} \qquad (6)$$

Where, $\Pi_{e,h}(\alpha)$ is the helper function of diffraction spectrum at Maliuzhinets methods. In the uniform-geometrical method of diffraction, the transition region on both sides of shadow boundary of geometrical optics will be effective,and it will degenerate into geometric diffraction theory formula automatically at outside.it is a good practical engineering computing .

Physical optics diffraction coefficient have been given in a lot of papers,Expression is shown below:

$$D_m^{PO} = -U^+\frac{\sin\varphi_s}{\cos a_1+\cos\varphi_i} - U^-\frac{\sin(n\pi-\varphi_s)}{\cos a_2+\cos(n\pi-\varphi_i)}$$

$$D_e^{PO} = -U^+\frac{\sin\varphi_i}{\cos a_1+\cos\varphi_i} - U^-\frac{\sin(n\pi-\varphi_i)}{\cos a_2+\cos(n\pi-\varphi_i)}$$

$$D_{em}^{PO} = -U^+\left[\frac{Q\cos\varphi_s}{\cos a_1+\cos\varphi_i}-\cos\beta_i\right]+U^-\left[\frac{Q\cos(n\pi-\varphi_s)}{\cos a_2+\cos(n\pi-\varphi_i)}-\cos\beta_i\right] \qquad (7)$$

Using the result of (6) and (7) into the (5), we are able to get the diffraction coefficient value after eliminating the singularity , then get the expression of the electromagnetic flow. The final results substitute in the original style will be able to get the diffraction results of UTD under the MEC:

$$\vec{E}^d = -jk\int_c\left\{Z\left[\frac{2j}{KZ\sin^2\beta_t}\vec{E}^t\cdot\hat{t}D_{22}+\frac{2j}{K\sin^2\beta_t}\vec{H}^t\cdot\hat{t}D_{21}\right]\hat{s}\times(\hat{s}\times\hat{t})\right.$$
$$\left.+\frac{2j}{KY\sin\beta_t\sin\beta_s}\vec{H}^t\cdot\hat{t}D_{11}(\hat{s}\times\hat{t})\right\}G(\bar{r}',\bar{r})dl \qquad (8)$$

The diffraction field is no longer confined to the Keller cone of a bus, it will extend UTD algorithm to an arbitrary direction, and get a finite value by means of integral. The above is the description of the diffraction problem-solving ideas of a finite-length anisotropic impedance split.By skillfully using The UTD and The MEC together,the problem can be properly solved.

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