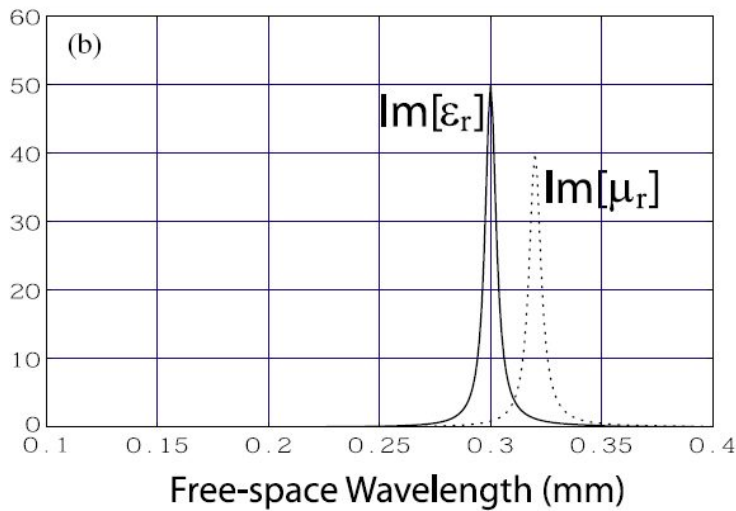
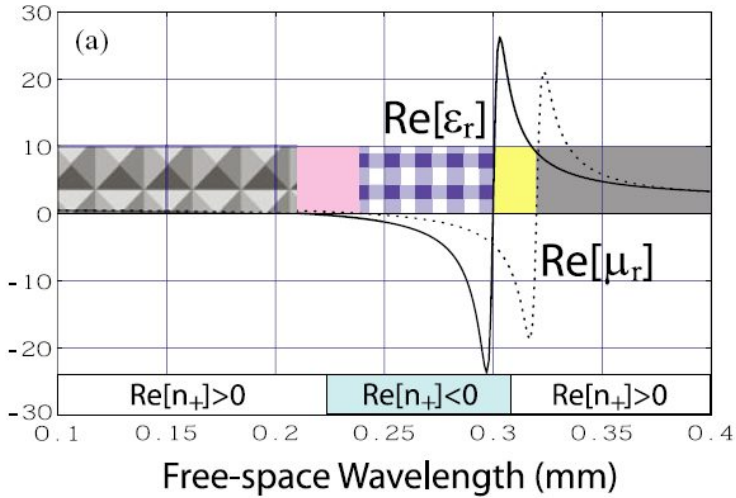


FIG. 2. Four possibilities for a source radiating into a 1D medium. (a) and (b) represent a right-handed medium (positive refractive index), while (c) and (d) represent a left-handed medium (negative refractive index). The arrows indicate the direction of the phase velocity. (a) and (d) represent cases where work is performed on the fields by the source. (b) and (c) represent cases where work is performed on the source by the fields. Note that the phase velocity is reversed in the left-handed medium (d).

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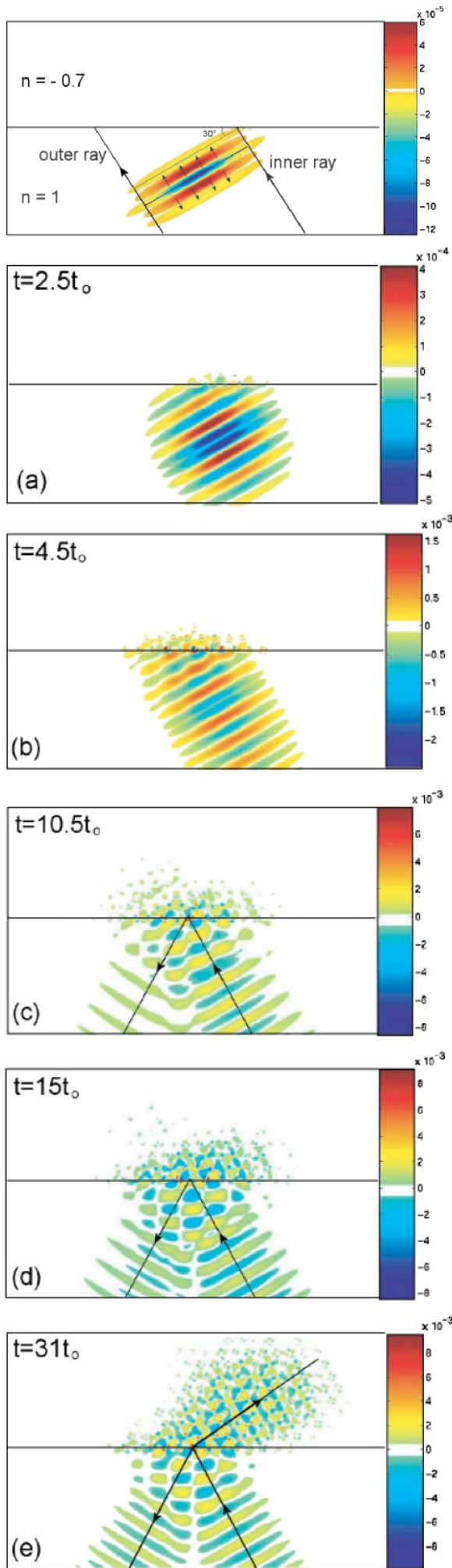


FIG. 3 (color online). The magnetic field of the Gaussian beam undergoing reflection and refraction for (a)  $t = 2.5t_0$ , (b)  $t = 4.5t_0$ , (c)  $t = 10.5t_0$ , (d)  $t = 15t_0$ , and (e)  $t = 31t_0$ .  $2t_0$  is the time difference between the outer and the inner rays to reach the interface;  $t_0 \approx 1.5T$ , where  $T$  is the period  $2\pi/\omega$ .

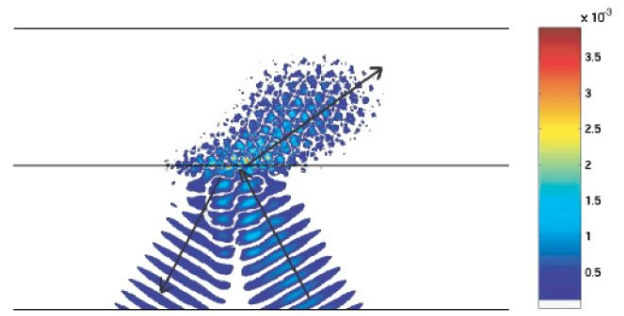


FIG. 4 (color online). The magnitude of the Poynting vector for an EM wave propagating along a  $30^\circ$  direction. The time is 6200 simulation steps, and is the same as the one shown in Fig. 3(e).