

# Homework No. 07

Lecture discussed the use of spectral decomposition for evaluation of Green's function in the presence of boundaries. This homework practices the acquired knowledge on the example of rectangular waveguide.

**Task No. 1:** Following the case of parallel plate waveguide discussed during the lecture, derive Green's function for electric field from electric current density inside a perfectly conducting rectangular waveguide. Assume the longer side of the waveguide cross-section (length  $a$ ) to be aligned with  $x$ -axis and the shorter side (length  $b$ ) to be aligned with  $y$ -axis. Start with Green's function for magnetic vector potential.