Abstract

Branching chain of rings as a quantum graph is considered. We use the transfer matrix method to obtain the spectral equation. The existence of bound states is proved. The discrete spectrum of the Schrodinger operator for the system is described. We find the dependence of the eigenvalues positions on the branching angle.

1 Single ring

Let now consider the straight semi-infinite chain of rings with delta-coupling imposed at each vertex. Wave function components on j-th ring are as follows:

At the boundary points those components have following values