For a given boundary equation solving the continuity of the magnetic field strength at the boundary (y-direction) between and :

The equation is expanded as follows:

Where:

By first substituting equation [2] into [1], the HM region tangential field is described, where represents the homogeneous relative permeability within the Fourier region, while is the relative permeability per element of the MEC-region. The magnetic flux density, calculated for the top or bottom layer of the MEC-region, was constant within a single element. To allow coupling with the neighboring Fourier regions, the right-hand side of [1] was modified as:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Constant |  |  |  |  |  |  |  |  |  |
| Unknown Coefficient |  |  |  |  |  |  |  |  |  |
| Variable |  |  |  |  |  |  |  |  |  |

My question is how the term in [3] receives the term integrated with respect to x for bounds to . A complex Fourier series is taken on the right side [3] which is where the summation comes from. Does the on the left side of [2] move from left to right as before taking the Complex Fourier series of the right side?