4. HELICAL MAGNETIC WIGGLER FIELD MODEL

4.1 INTRODUCTION

In chapter two we chose a simple model of the magnetic wiggler field for the formulation and solution of the problem. More complex and accurate models were introduced and discussed but were not analyzed. Equation (4.1) shows a model for a magnetic wiggler field that contains two terms. The first term is the same as the one in equation (2.2) but now we have introduced a second term in the x direction.

$$\overrightarrow{B_w} = \hat{x} B_{wox} \cos(k_w z + \phi_{wx}) + \hat{y} B_{woy} \sin(k_w z + \phi_{wy}) \qquad (4.1)$$

This model allows us to choose parameters to create any desired transverse magnetic wiggler field such as a circularly polarized wiggler, an elliptically polarized wiggler, or a linear wiggler in an arbitrary transverse direction. Using the two dimensional model for the magnetic wiggler field we proceed to follow the analysis described in Section 2.3. The analysis is similar but slightly more involved.