

**Analysis of the Multipurpose Sextupole of SOLEIL using Halbach's Perturbation Theory and the POISSON Code\***, A. NADJI, SOLEIL (France); P. PEAUPARDIN, LURE (France) - The SOLEIL storage ring sextupole is a multipurpose magnet. In addition to its primary function as a sextupole, it provides horizontal and vertical dipolar fields and skew quadrupolar field using auxiliary sets of coils. In this paper, we will discuss the application of Halbach's perturbation theory to calculate the required dipolar excitation. We will also show the effectiveness of this theory in determining the extra multipolar components introduced by the additional fields and their strengths. Finally, we will show the very good agreement between these results and those provided by the POISSON code.

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