**Calculation of Spin Response Function using Twiss Parameter Table**

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Response function of a racetrack with two Siberian snakes operating in the ST mode in a highly relativistic case [[[1]](#endnote-1)]:

The Floquet functions and their derivatives:

where , , and are the usual Twiss parameters from a table generated by a lattice design code. The spin phase advance is:

where is the local orbit curvature and is the orbital angle from the Twiss table. Assuming that there are a total of bending magnets, the response function is given by

where is at ’s dipole, is at the exit from ’s dipole, is at the entrance into ’s dipole (the same as at the exit of ’s dipole). and are

where is the length of ’s dipole.

Denoting

we get

Next, define

getting

The statistical model predicts the following value of the coherent part of the zero-integer spin resonance strength

where

for dipoles and

for quadrupoles.

The columns in the accompanying Excel spreadsheet are labeled according to the above notation.

1. [] A.M. Kondratenko, M.A. Kondratenko, and Yu.N. Filatov, “Calculation of the spin response function in the spin transparency mode”, to be published. [↑](#endnote-ref-1)