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Modeling of spin depolarisation at ESRF and ALS

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The difficulty to find a sharp spin depolarisation resonance at the ESRF (see DEELS 2014) motivated a careful analysis of the depolarisation process. A spin tracking code was developed by colleagues in the Beam Dynamics Group. It allows to follow the electron spins of many particles as they propagate in the storage ring lattice while being excited by an oscillating magnetic field. The output of the code is the polarisation of the electron beam after N turns in the storage ring. Simulations were done for the ESRF and the Australian Synchrotron. The results reveal substantial differences in the depolarisation behaviour of the two storage rings in accordance with the experimental findings. We would be interested in simulating the depolarisation at other light sources and compare the results with measurements in order to validate the code and get a deeper understanding on which parameters are favourable for the detection of distinct spin depolarisation resonances.

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