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Erratum

# Erratum to: Electromagnetic dipole moments of charged baryons with bent crystals at the LHC

**E. Bagli[1], L. Bandiera[1], G. Cavoto[2], V. Guidi[1], L. Henry[3], D. Marangotto[4], F. Martinez Vidal[3], A. Mazzolari[1], A. Merli[4,5], N. Neri[4,5,a], J. Ruiz Vidal[3], A. Sytov[1], V. Tikhomirov[6]**

[1] INFN Sezione di Ferrara and Università di Ferrara, Ferrara, Italy
[2] INFN Sezione di Roma and "Sapienza" Università di Roma, Roma, Italy
[3] IFIC, Universitat de València-CSIC, Valencia, Spain
[4] INFN Sezione di Milano and Universita' degli Studi di Milano, Milan, Italy
[5] CERN, Geneva, Switzerland
[6] Institute for Nuclear Problems, Belarusian State University, Minsk, Belarus

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In this Erratum, an improved simulation of the channeling efficiency of protons and antiprotons as a function of the particle momentum is shown in Fig. 1 for different configurations of Si crystals bent along the (110) plane. Multiple scattering with nuclei and inner shell electrons was not properly taken into account and it has been corrected using the simulation code CRYSTAL [1], which is designed for simulations of trajectories of charged particles interacting with crystalline structures. The code solves the equation of motion for a charged particle interacting with the electric field generated by atomic strings or planes accounting for multiple scattering according to Refs. [2,3]. The code accounts for a wide variety of effects, namely multiple and single Coulomb scattering on nuclei and electrons, nuclear scattering, ionization losses, crystal geometry. and, for the case of leptons, emission of radiation. The model used in the code has been validated for electrons at sub- GeV energy, for electrons and positrons at 20 GeV, for electrons and positrons at 120 GeV, as well as for protons at few hundreds of GeV for crystals at room temperature.

The new distribution of the channeling efficiency for 7 cm long and 14 mrad bent Si crystal is significantly different from the previous version, presenting a maximum around 400 GeV and going to zero at lower energies. This result has no impact on the rest of the paper, since channeling efficiency for $\Lambda_c^+$ baryons is simulated using a parameterisation based on current theoretical description and channeling measurements, following Ref. [4].

In addition, a wrong plus and a wrong minus sign have been identified in Eqs. (5) and (7), respectively.

The corrected equations are reported below:

$$\boldsymbol{\Omega}_{\mathrm{EDM}} = \frac{d\mu_B}{\hbar}\left(\mathbf{E} - \frac{\gamma}{\gamma+1}(\boldsymbol{\beta}\cdot\mathbf{E})\boldsymbol{\beta} + \boldsymbol{\beta}\times\mathbf{B}\right),$$

$$s_x \approx s_0 \frac{d}{g-2}(1-\cos\Phi).$$

It is worth it to note that Eqs. (7) and (8) of the paper apply for up- and down-bending crystals, with the bending angle $\theta_C$ taken negative and positive, respectively. The equations are in agreement with Ref. [5] where an opposite sign convention is used for the bending angle $\theta_C$. The wrong sign errors have no impact on other results reported in the paper.

The original article can be found online at https://doi.org/10.1140/epjc/s10052-017-5400-x.

[a] e-mail: nicola.neri@mi.infn.it (corresponding author)

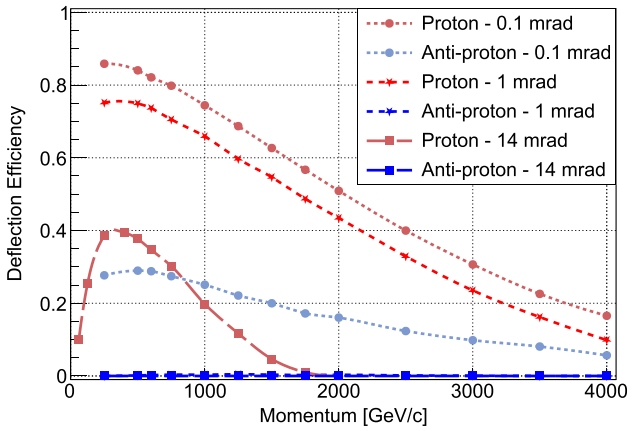


**Fig. 1** Dependence of the channeling efficiency of protons and antiprotons with the particle momentum for 1 mm, 1 cm and 7 cm long Si crystals bent along the (110) plane by a 0.1 mrad, 1 mrad, and 14 mrad bending angle, respectively. The curves for the anti-proton interacting with the 1 cm and 7 cm long Si crystals are superimposed

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**Data Availability Statement** This manuscript has no associated data or the data will not be deposited. [Authors' comment: The relevant data are presented in Figure 1 of the erratum.]


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