



PUBLISHED FOR SISSA BY SPRINGER

RECEIVED: April 30, 2015

ACCEPTED: April 30, 2015

PUBLISHED: May 18, 2015

## Erratum: Nuclear electric dipole moments in chiral effective field theory

J. Bsaisou,<sup>a</sup> J. de Vries,<sup>a</sup> C. Hanhart,<sup>a,b</sup> S. Liebig,<sup>a</sup> Ulf-G. Meißner,<sup>a,b,c,d</sup> D. Minossi,<sup>a</sup>  
A. Nogga<sup>a,b</sup> and A. Wirzba<sup>a,b</sup>

<sup>a</sup>*Institute for Advanced Simulation, Institut für Kernphysik, and Jülich Center for Hadron Physics, Forschungszentrum Jülich, D-52425 Jülich, Germany*

<sup>b</sup>*JARA — Forces and Matter Experiments, Forschungszentrum Jülich, D-52425 Jülich, Germany*

<sup>c</sup>*JARA — High Performance Computing, Forschungszentrum Jülich, D-52425 Jülich, Germany*

<sup>d</sup>*Helmholtz-Institut für Strahlen- und Kernphysik and Bethe Center for Theoretical Physics, Universität Bonn, D-53115 Bonn, Germany*

*E-mail:* [j.bsaisou@fz-juelich.de](mailto:j.bsaisou@fz-juelich.de), [j.de.vries@fz-juelich.de](mailto:j.de.vries@fz-juelich.de),  
[c.hanhart@fz-juelich.de](mailto:c.hanhart@fz-juelich.de), [s.liebig@fz-juelich.de](mailto:s.liebig@fz-juelich.de),  
[meissner@hiskp.uni-bonn.de](mailto:meissner@hiskp.uni-bonn.de), [d.minossi@fz-juelich.de](mailto:d.minossi@fz-juelich.de),  
[a.nogga@fz-juelich.de](mailto:a.nogga@fz-juelich.de), [a.wirzba@fz-juelich.de](mailto:a.wirzba@fz-juelich.de)

ERRATUM TO: [JHEP03\(2015\)104](#)

ARXIV EPRINT: [1411.5804](https://arxiv.org/abs/1411.5804)

As first observed in ref. [1], the usual weight factors of the neutron ( $d_n$ ) and proton ( $d_p$ ) single-nucleon contribution to the electric dipole moment of the deuteron are lacking a small wave-function-dependent term resulting from the subleading  ${}^3D_1$  component of the deuteron wave function. A simple calculation reveals that the total single-nucleon contribution is

$$d_{2\text{H},\text{single}} = \left(1 - \frac{3}{2} P_D\right) (d_n + d_p),$$

where  $P_D$  is the probability of the deuteron  ${}^3D_1$ -state, which of course depends on the choice of the wave function.

Therefore the values 1.00 of the  $d_n$  and  $d_p$  weight factors have to be modified in the following places of our paper [2]:

- (i) in the first two rows of table 1, see the enclosed table 1',

label	N <sup>2</sup> LO $\chi$ EFT	$Av_{18}$	CD-Bonn	units
$d_n$	$0.939 \pm 0.009$	0.914	0.927	$d_n$
$d_p$	$0.939 \pm 0.009$	0.914	0.927	$d_p$
$g_1$	$-0.183 \pm 0.017$	-0.186	-0.186	$g_1 e \text{ fm}$
$\Delta f_{g_1}$	$0.748 \pm 0.138$	0.703	0.719	$\Delta e \text{ fm}$

**Table 1’.** The new entries of table 1. Captions as in table 1. Note that the new  $d_n$  and  $d_p$  weight factors displayed for the  $Av_{18}$  potential exactly agree with the ones of ref. [1].

(ii) in the first bracket on the right-hand side of eq. (3.2),

$$d_{2\text{H}} = (0.939 \pm 0.009)(d_n + d_p) - [(0.183 \pm 0.017) g_1 - (0.748 \pm 0.138) \Delta] e \text{ fm}, \quad (3.2')$$

(iii) implicitly in the first bracket of eq. (4.9),

$$d_{2\text{H}}^\theta = \bar{\theta} \cdot \left\{ [(0.56 \pm 0.01 \pm 1.59)] - (0.62 \pm 0.06 \pm 0.28) - (0.28 \pm 0.05 \pm 0.07) \right\} \cdot 10^{-16} e \text{ cm}, \quad (4.9')$$

such that “(0.6±1.7)” is replaced by “(0.56±0.01±1.59)”, where the first uncertainty is the nuclear one, while the second is the hadronic one,

(iv) explicitly on the left-hand side of eq. (4.10),

$$d_{2\text{H}}^\theta - 0.94(d_p^\theta + d_n^\theta) = -\bar{\theta} \cdot (0.89 \pm 0.30) \cdot 10^{-16} e \text{ cm}, \quad (4.10')$$

(v) and on the left-hand side of eq. (5.5),

$$\begin{aligned} d_{2\text{H}}^{LR} - 0.94(d_p^{LR} + d_n^{LR}) &= \Delta^{LR} [(1.37 \pm 0.13 \pm 0.41) + (0.75 \pm 0.14) \pm 0.1] e \text{ fm} \\ &= \Delta^{LR} (2.1 \pm 0.5) e \text{ fm}. \end{aligned} \quad (5.5')$$

In the latter two cases the uncertainty of the single-nucleon contributions can safely be neglected.

**Open Access.** This article is distributed under the terms of the Creative Commons Attribution License ([CC-BY 4.0](https://creativecommons.org/licenses/by/4.0/)), which permits any use, distribution and reproduction in any medium, provided the original author(s) and source are credited.

## References

- [1] N. Yamanaka and E. Hiyama, *Enhancement of the CP-odd effect in the nuclear electric dipole moment of  ${}^6\text{Li}$* , [arXiv:1503.04446](https://arxiv.org/abs/1503.04446) [[INSPIRE](https://inspirehep.net/literature/1503044)].
- [2] J. Bsaisou et al., *Nuclear electric dipole moments in chiral effective field theory*, *JHEP* **03** (2015) 104 [[arXiv:1411.5804](https://arxiv.org/abs/1411.5804)] [[INSPIRE](https://inspirehep.net/literature/1411580)].