Corrections to the paper "Electron cyclotron current drive calculated for ITER conditions using different models" [Nucl. Fusion 48 054002 (2008)]

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The authors apologize for this late correction of a few errors which appeared in our paper. While the physical and mathematical formulations given in the paper do not contain any error, the toroidal angle scanning (Chapters 4 and 5) was produced with erroneous definitions in the numerical code used. As a consequence, the results shown in Fig. 3 and Fig. 5 are incorrect, and the toroidal angle scan has therefore been recalculated and additionally benchmarked. Below the revised results are shown and briefly discussed when necessary. The main conclusions made in the paper are not affected.

Chapter 4. Angle scanning for the equatorial launcher

As follows from the new Fig. 3, left, the ECCD efficiency, calculated with parallel momentum conservation taken into account, tends to coincide with the high-speed-limit model only for large launch angles. This is an expected result. At the same time, the efficiency is quite different (up to a factor 2.5) for moderate and small angles. Contrary to the previous (erroneous) results, these calculations demonstrate that the high-speed-limit model significantly underestimates the current drive efficiency in the whole range of angles.

In Fig. 3, right, the angle-dependence of $I_{\mathrm{cd}}/\delta\rho^2$ is shown. Qualitatively, this dependence is the same as before and differs only by its magnitude, which is nearly twice a large.

Chapter 5. Scenario with reduced magnetic field

The toroidal angle scan for the ITER scenario with a reduced magnetic field was also recalculated. As before, one can see in the new Fig. 5, left, that the ECCD efficiency calculated with parallel momentum conservation is also higher than that obtained from the high-speed-limit. Nevertheless, contrary to the previous case (with a nominal magnetic field), one can observe that the discrepancy is not so strong (at least, for $\beta > 10^\circ$), being close to 15%. Apart from this, the (negative) contribution of the 2nd cyclotron harmonic, which leads to a reduction of the ECCD efficiency, is much higher than for the scenario with the nominal magnetic field, especially for small ($\beta < 5^\circ$) and moderate ($10^\circ < \beta < 20^\circ$) angles, where the reduction of ECCD reaches 50% and 13 - 18%, respectively.

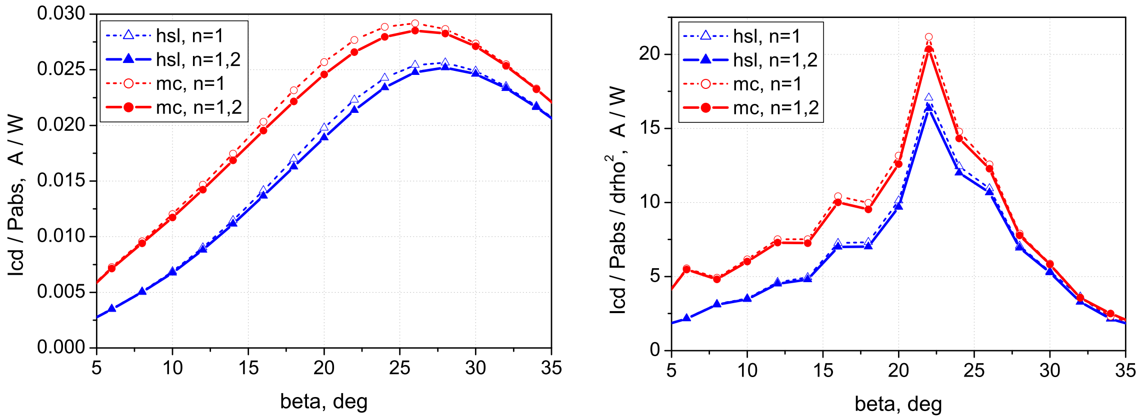
The angle-dependence of $I_{\mathrm{cd}}/\delta\rho^2$, which is shown in the new Fig. 3, right, is again qualitatively very similar to that calculated before, but nearly twice a large. In particular, the location of the maximum is the same.

LIST OF FIGURE CAPTIONS

Figure 3: Launch from the equatorial top mirror: ECCD efficiency, I_{cd}/P_{RF} (left), and its (normalized) density, $I_{cd}/(P_{RF}\Delta\rho^2)$ (right), for both hsl-model (triangles) and mc-model (circles) are shown. For comparison, calculations are performed with the $n = 1$ harmonic (dashed lines) as well with the $n = 1, 2$ harmonics (full lines) taken into account.

Figure 5: Reduced magnetic field, $B = 4.5$ T, launch from the equatorial top mirror: the same as in Fig. 3.

Figure 3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0.010
0.015
0.020
0.025
0.030
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15
20
25
30
35
hsl, n=1
hsl, n=1,2
mc, n=1
mc, n=1,2
Icd / Pabs / drho2, A / W
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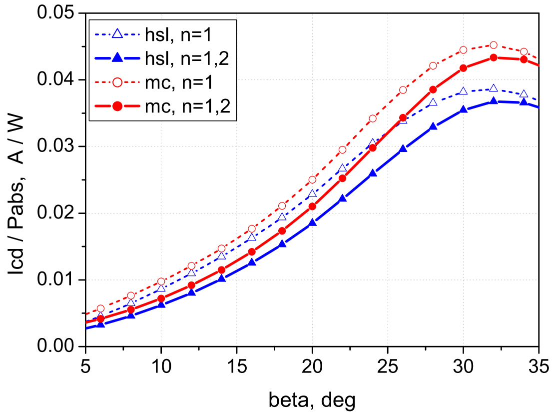
Figure 5



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mc, n=1,2
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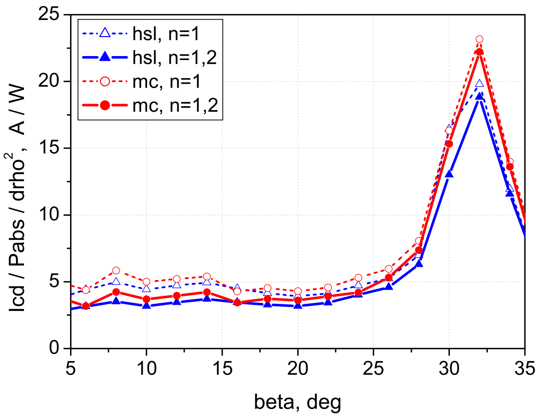

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