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Erratum

Corrigendum to "Surface effects in rarefied gas dynamics: an analysis based on the Cercignani–Lampis boundary conditions" [Eur. J. Mech. B/Fluids 25 (2006) 113–129]

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We note that, in generating the numerical results showed in Table 1, column 3, of the above mentioned paper, a factor ε_t was missed in a linear system in the program, and because of that some of the digits listed in that column should be changed, as now presented in Table 1.

We also want to point out that, as cited in the paper, we used $N = 60$ quadrature points to generate all the sixteen tables. However, for expressing the appropriate number of digits which remain the same as N increases (up to 400), that we believe are the correct ones, a bigger value of N should be used to generate some cases, mainly when $\alpha_n = 0.01$. Below, we list such cases, with $N = 200$, in Tables 2–4.

Since, in general, two to three digits of the results reported in the paper remain the same, we remark that the results here presented do not change the conclusions addressed in the paper.

Still, we want to mention that, to be consistent with our definition of the component P_{xy} of the stress tensor, we have to make it clear that the results listed in Table 16 of the paper were multiplied for $\pi^{1/2}$, in order to establish some comparisons with previous works (Refs. [13,19]). We reproduce here the results, in Table 5, where we now added this explanation.

Finally, we remark that in Table 15, column 4, a number was mistyped, and we should read 1.807911(−2) instead of 1.809911(−2).

Acknowledgement

Possible differences with the results reported in the paper, in the cases mentioned above, were pointed us out by R.D.M. Garcia, when checking one of his works. The authors would like to thank him for confirming (with at least six digits of agreement) the present results.

Table 1
S-CL, $\varepsilon = \varepsilon_t$, $N = 60$, $2a = 1$, $\alpha_t = 0.5$, $\alpha_n = 0.5$.

y/a	$u_p(y)$
0.0	−1.79806
0.1	−1.79482
0.2	−1.78505
0.3	−1.76860
0.4	−1.74519
0.5	−1.71436
0.6	−1.67540
0.7	−1.62709
0.8	−1.56726
0.9	−1.49091
1.0	−1.37221

Table 2
BGK-CL, $N = 200$, $2a = 2$, $\alpha_t = 0.5$, $\alpha_n = 0.01$.

y/a	$u_p(y)$	$u_t(y)$
0.0	−3.651928	2.438685(−1)
0.1	−3.644541	2.434174(−1)
0.2	−3.622274	2.420473(−1)
0.3	−3.584802	2.397054(−1)
0.4	−3.531521	2.362951(−1)
0.5	−3.461441	2.316591(−1)
0.6	−3.372959	2.255471(−1)
0.7	−3.263370	2.175443(−1)
0.8	−3.127621	2.068943(−1)
0.9	−2.954003	1.918959(−1)
1.0	−2.679078	1.637520(−1)

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Table 3
BGK-CL, $N = 200$, $2a = 1$, $\alpha_n = 0.01$.

y/a	$\alpha_t = 0.5$		$\alpha_t = 0.5$		$\alpha_t = 0.5$		$\alpha_t = 0.1$
	$u_p(y)$	$q_p(y)$	$u_t(y)$	$q_t(y)$	$u_c(y)$, $u_w = 1$	$q_c(y)$, $u_w = 1$	$q_t(y)$
0.0	−1.77845	2.10324(−1)	1.970495(−1)	−8.573861(−1)	0.0	0.0	−1.106907
0.1	−1.77593	2.09690(−1)	1.967239(−1)	−8.559500(−1)	−2.180708(−2)	3.284340(−3)	−1.106434
0.2	−1.76834	2.07769(−1)	1.957379(−1)	−8.515904(−1)	−4.372625(−2)	6.624731(−3)	−1.104998
0.3	−1.75555	2.04496(−1)	1.940627(−1)	−8.441466(−1)	−6.587903(−2)	1.008193(−2)	−1.102550
0.4	−1.73732	1.99758(−1)	1.916457(−1)	−8.333257(−1)	−8.840805(−2)	1.372723(−2)	−1.099000
0.5	−1.71328	1.93364(−1)	1.884019(−1)	−8.186543(−1)	−1.114946(−1)	1.765134(−2)	−1.094201
0.6	−1.68284	1.85017(−1)	1.841971(−1)	−7.993835(−1)	−1.353898(−1)	2.197970(−2)	−1.087923
0.7	−1.64499	1.74219(−1)	1.788110(−1)	−7.742888(−1)	−1.604769(−1)	2.690408(−2)	−1.079790
0.8	−1.59794	1.60070(−1)	1.718472(−1)	−7.411755(−1)	−1.874273(−1)	3.276007(−2)	−1.069130
0.9	−1.53764	1.40545(−1)	1.624289(−1)	−6.952403(−1)	−2.177249(−1)	4.028967(−2)	−1.054476
1.0	−1.44340	1.05299(−1)	1.461658(−1)	−6.131707(−1)	−2.590036(−1)	5.330984(−2)	−1.028737

Table 4
BGK-CL, $N = 200$, $\alpha_t = 0.5$.

$2a$	$\alpha_n = 0.01$		$\alpha_n = 0.5$		$\alpha_n = 0.01$	
	U_p	Q_p	U_p	Q_p	U_c, $u_w = 1$	$Q_c{}^*$, $u_w = 1$
0.01	−6.491162	2.352902	−5.011542	1.408968		
0.02	−5.908806	2.039795	−4.664197	1.228046		
0.03	−5.550360	1.842533	−4.469519	1.124381		
0.04	−5.293253	1.698433	−4.335981	1.051862		
0.05	−5.094976	1.585530	−4.235358	9.962172(−1)		
0.07	−4.802600	1.415601	−4.089093	9.133325(−1)		
0.09	−4.592958	1.290604	−3.984625	8.522458(−1)		
0.1	−4.508029	1.239042	−3.942165	8.268520(−1)	−2.677004(−1)	8.809986(−2)
0.3	−3.769982	7.519601(−1)	−3.558721	5.712674(−1)		
0.5	−3.540894	5.675754(−1)	−3.430280	4.607790(−1)		
0.7	−3.435833	4.631513(−1)	−3.370373	3.926452(−1)		
0.9	−3.382786	3.941731(−1)	−3.341530	3.448332(−1)		
1.0	−3.367338	3.675334(−1)	−3.334088	3.256784(−1)	−1.158763(−1)	1.984214(−2)
3.0	−3.486414	1.638065(−1)	−3.483401	1.627443(−1)		
3.5	−3.553443	1.446982(−1)	−3.549687	1.455576(−1)		
4.0	−3.624552	1.297018(−1)	−3.619647	1.317739(−1)		
5.0	−3.774108	1.075991(−1)	−3.766531	1.109510(−1)		
6.0	−3.929318	9.203309(−2)	−3.919108	9.589976(−2)		
7.0	−4.087707	8.044455(−2)	−4.075113	8.447596(−2)		
9.0	−4.409708	6.429916(−2)	−4.393176	6.823850(−2)		
10.0	−4.572268	5.844125(−2)	−4.554131	6.225334(−2)	−3.266433(−2)	4.283327(−4)
100.0	−19.53238	6.335471(−3)	−19.49650	6.945731(−3)		

* This quantity was erroneously generated in the paper with $\alpha_n = 0.001$.

Table 5
Couette flow: a component P_{xy} of the pressure tensor, $u_w = 1$, $\alpha_t = 1.0$.

$2a$	BGK-CL* $\alpha_n = 0.01$	BGK-DE [13] $\alpha_t = \alpha$	S-CL* $\alpha_n = 0.5$	S-DE [19] $\alpha_t = \alpha$	BGK-CL* $\alpha_n = 0.5$
1.0(−2)	9.913980(−1)	9.9139801(−1)	9.913980(−1)	9.9139796(−1)	9.913980(−1)
2.0(−2)	9.831755(−1)	9.8317550(−1)	9.831753(−1)	9.8317529(−1)	9.831755(−1)
1.0(−1)	9.257968(−1)	9.2579682(−1)	9.257894(−1)	9.2578942(−1)	9.257968(−1)
1.0	6.007292(−1)	6.0072919(−1)	6.005436(−1)	6.0054357(−1)	6.007292(−1)
2.0	4.436467(−1)	4.4364669(−1)	4.434197(−1)	4.4341971(−1)	4.436467(−1)
3.0	3.535337(−1)	3.5353372(−1)	3.533315(−1)	3.5333149(−1)	3.535337(−1)
1.0(1)	1.473125(−1)	1.4731246(−1)	1.472598(−1)	1.4725985(−1)	1.473125(−1)
2.0(1)	8.044769(−2)	8.0447692(−2)	8.043177(−2)	8.0431772(−2)	8.044769(−2)
1.0(3)	1.768859(−3)	1.7688589(−3)	1.768851(−3)	1.7688511(−3)	1.768859(−3)
1.0(7)	1.772453(−7)	1.7724535(−7)	1.772453(−7)	1.7724535(−7)	1.772453(−7)

* $\pi^{1/2} P_{xy}$.