

The dynamics of the parsec-scale jet in the neutrino blazar PKS 0735+178 (Corrigendum)

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In the published paper, Eq. (4) correctly included the cosmological time-dilation factor, $(1+z)$, in the conversion from proper motion to apparent jet speed. However, this factor was inadvertently omitted in the numerical calculation. Since the adopted redshift is $z = 0.42$, the apparent speeds derived from Eq. (4) should be multiplied by $1+z = 1.42$. Accordingly, the affected numerical values in the Abstract, main text, Table 2, and Fig. 12 should be revised as described below.

Including the proper redshift correction $(1+z)$, the corrected apparent speeds are $\beta_{\text{app}} = 1.103 \pm 0.056$, 6.702 ± 0.615 , 7.774 ± 16.139 , and 7.293 ± 50.427 for the C1, C2, C3, and C4 components, respectively. Therefore, references to C1 as a “subluminal” component, or to its “subluminal speed,” should be replaced by “slow-moving” or “slow-moving, mildly superluminal.” The historical apparent speeds quoted from the literature for comparison should also be corrected by the same factor: the historical maximum ($4.8c$) and median ($3.1c$) speeds at 15 GHz should be revised to $6.78c$ and $4.41c$, respectively, and the historical maximum ($4.5c$) and median ($3.6c$) speeds at 43 GHz should be revised to $6.25c$ and $4.94c$, respectively. Thus, the corrected apparent speed of C2, $\beta_{\text{app}} = 6.70 \pm 0.62$, still remains comparable to the historical maximum apparent speeds reported for PKS 0735+178. The corresponding corrected minimum Lorentz factors are $\Gamma_{\text{min}} = 1.49 \pm 0.04$ and 6.78 ± 0.61 for C1 and C2, respectively. For C2, the corrected critical viewing angle, variability Lorentz factor, and variability viewing angle are $\theta_c = (8.49 \pm 0.77)^\circ$, $\Gamma_{\text{var}} = 6.82 \pm 0.63$, and $\theta_{\text{var}} = (7.52 \pm 3.50)^\circ$, respectively. These corrected values are listed in Table 1.

For the comparison with $\delta \approx 30$, the required viewing angle and Lorentz factor of C2 should be changed from $\theta \approx 0.6^\circ$ and $\Gamma \approx 15.4$ to $\theta \approx 0.81^\circ$ and $\Gamma \approx 15.76$, respectively. Accordingly, the viewing-angle change for C2 discussed in the original paper should be revised from $\theta \approx 0.6^\circ$ – 6.8° to $\theta \approx 0.8^\circ$ – 7.5° . The corresponding updates are reflected in the corrected Fig. 12. Using the corrected viewing angle, the deprojected distance of the apparent C1–C2 passage region from the very long baseline interferometry core should be revised from 6.05 ± 3.65 pc to 5.49 ± 2.58 pc. Accordingly, the distance quoted as ≥ 6.5 pc should be revised to ≥ 5.5 pc.

These numerical corrections do not affect the fitted component positions, angular proper motions, ejection epoch of C2, or inferred C1–C2 passage time, as these quantities were

Table 1. Corrected numerical values.

Quantity	Published value	Corrected value
$\beta_{\text{app}}(\text{C1})$	0.777 ± 0.039	1.103 ± 0.056
$\beta_{\text{app}}(\text{C2})$	4.720 ± 0.433	6.702 ± 0.615
$\beta_{\text{app}}(\text{C3})$	5.475 ± 11.36	7.774 ± 16.139
$\beta_{\text{app}}(\text{C4})$	5.136 ± 35.51	7.293 ± 50.427
$\Gamma_{\text{min}}(\text{C1})$	1.27 ± 0.02	1.49 ± 0.04
$\Gamma_{\text{min}}(\text{C2})$	4.82 ± 0.42	6.78 ± 0.61
$\theta_c(\text{C2})$	$11.9 \pm 1.06^\circ$	$8.49 \pm 0.77^\circ$
$\Gamma_{\text{var}}(\text{C2})$	5.33 ± 0.97	6.82 ± 0.63
$\theta_{\text{var}}(\text{C2})$	$6.83 \pm 4.11^\circ$	$7.52 \pm 3.50^\circ$
d_{deproj}	6.05 ± 3.65 pc	5.49 ± 2.58 pc

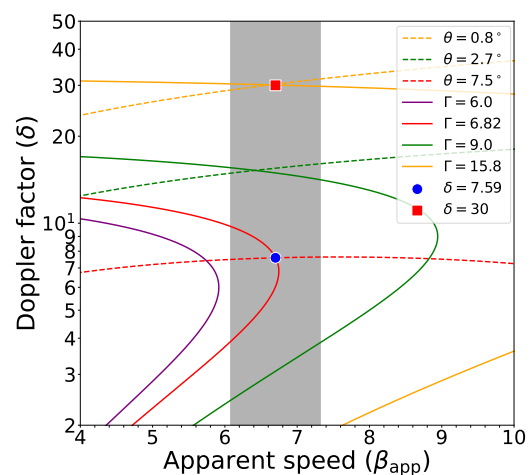


Fig. 12. Corrected version of Fig. 12 in the original paper. The gray shaded region has been updated to reflect the corrected apparent speed of C2.

determined directly from the angular motions. The main observational results of the paper – a temporal coincidence between the apparent C1–C2 passage and IceCube-211208A – are therefore valid, and the scientific conclusions of the paper remain unchanged.

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