The complex multi-component outflow of the Seyfert galaxy NGC 7130
(Corrigendum)

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This is a corrigendum to Comerón et al. (2021). Due to a mistake in our codes, all line fluxes were multiplied by a factor of 1.25. This affects the colour scales in two figures and the physical magnitudes derived from the flux in Hβ, the mass outflow rates, the kinetic power of the outflow, and the fraction of the outflow. The conclusions of the paper remain unchanged. The corrected figures, tables, and relevant portions of the text are given below.

4.8. The mass outflow rate and the kinetic power

The mass-loss rates and kinetic power estimates for each of the outflow components are shown in Table 6. We find a total mass loss rate of $M = 0.44 \pm 0.27 M_\odot$ yr$^{-1}$ and a total kinetic power of $E_{\text{kin}} = (7.0 \pm 4.8) \times 10^{40}$ erg s$^{-1}$ for the blueshifted components. If we also account for the more poorly constrained redshifted components, these values are $M = 1.2 \pm 0.7 M_\odot$ yr$^{-1}$ and $E_{\text{kin}} = (2.7 \pm 2.0) \times 10^{41}$ erg s$^{-1}$, respectively. The latter values have to be considered with caution because a third of the mass-loss rate and two-thirds of the kinetic power come from the redshifted component that is hard to characterise. Indeed, we might only be detecting it over a small fraction of its true extent, which can cause a large overestimate in its associated mass-loss rate and kinetic power (through Eq. (9)). Assuming a bolometric AGN luminosity of $L_{\text{bol}} = 2.2 \times 10^{44}$ erg s$^{-1}$ (Esquej et al. 2014, we corrected the luminosity for the different distance estimates), the fraction of power emitted in kinetic energy is $F_{\text{kin}} = 0.032 \pm 0.022\%$ for the blueshifted

Table 6. Average physical properties of kinematic components of the ionised gas.

<table>
<thead>
<tr>
<th>Component</th>
<th>BPT classification</th>
<th>ne (cm$^{-3}$)</th>
<th>E(B−V)</th>
<th>[S III]/[S II]</th>
<th>L(Hβ)$_{\text{corr}}$ (10$^{39}$ erg s$^{-1}$)</th>
<th>$M$ (M$_\odot$ yr$^{-1}$)</th>
<th>$E_{\text{kin}}$ (10$^{39}$ erg s$^{-1}$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disc</td>
<td></td>
<td>90 ± 20</td>
<td>0.60 ± 0.01</td>
<td>0.385 ± 0.008</td>
<td>235 ± 5</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Blueshifted narrow</td>
<td>Seyfert</td>
<td>500 ± 100</td>
<td>0.34 ± 0.04</td>
<td>1.20 ± 0.08</td>
<td>27 ± 1.9</td>
<td>0.05 ± 0.03</td>
<td>1.2 ± 1.1</td>
</tr>
<tr>
<td>Zero-velocity narrow</td>
<td>SF + AGN</td>
<td>500 ± 400</td>
<td>0.53 ± 0.11</td>
<td>0.68 ± 0.15</td>
<td>15 ± 3</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Crescent narrow</td>
<td>LINER</td>
<td>180 ± 20</td>
<td>0.78 ± 0.01</td>
<td>0.134 ± 0.003</td>
<td>3.9 ± 0.1</td>
<td>0.09 ± 0.04</td>
<td>3.0 ± 2.1</td>
</tr>
<tr>
<td>Redshifted narrow 1</td>
<td>Seyfert</td>
<td>500 ± 100$^{(*)}$</td>
<td>0.56 ± 0.13</td>
<td>2.7 ± 0.7</td>
<td>8 ± 2</td>
<td>0.09 ± 0.05</td>
<td>2.9 ± 3.0</td>
</tr>
<tr>
<td>Redshifted narrow 2</td>
<td>Seyfert</td>
<td>500 ± 100$^{(*)}$</td>
<td>0.57 ± 0.11</td>
<td>0.9 ± 0.3</td>
<td>6.2 ± 1.4</td>
<td>0.16 ± 0.10</td>
<td>25 ± 19</td>
</tr>
<tr>
<td>Blueshifted broad</td>
<td>Seyfert</td>
<td>500 ± 100</td>
<td>0.46 ± 0.03</td>
<td>1.27 ± 0.07</td>
<td>57 ± 3</td>
<td>0.39 ± 0.24</td>
<td>69 ± 47</td>
</tr>
<tr>
<td>Zero-velocity broad</td>
<td>Seyfert</td>
<td>300 ± 100$^{(*)}$</td>
<td>0.80 ± 0.28</td>
<td>0.9 ± 0.5</td>
<td>23 ± 13</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Redshifted broad</td>
<td>Seyfert</td>
<td>300 ± 100$^{(*)}$</td>
<td>0.57 ± 0.11$^{(*)}$</td>
<td>1.27 ± 0.07$^{(*)}$</td>
<td>1.8 ± 0.4</td>
<td>0.41 ± 0.26</td>
<td>170 ± 130</td>
</tr>
</tbody>
</table>

Notes. Error estimates are calculated by propagating the uncertainties quoted in Table 6 and Sects. 4.7 and 4.8 in quadrature. Values indicated by asterisks (*) do not come from measurements, but are instead educated guesses used for our calculations (see Sects. 4.7 and 4.8).
components and $F_{\text{kin}} = 0.12 \pm 0.09\%$ if accounting for all components.

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be $\dot{M} = 1.2 \pm 0.7 M_\odot \text{yr}^{-1}$ ($\dot{M} = 0.44 \pm 0.27 M_\odot \text{yr}^{-1}$) and $E_{\text{kin}} = (2.7 \pm 2.0) \times 10^{43} \text{erg s}^{-1}$ ($E_{\text{kin}} = (7.0 \pm 4.8) \times 10^{40} \text{erg s}^{-1}$), respectively. The kinetic power is $F_{\text{kin}} = 0.12 \pm 0.09\%$ ($F_{\text{kin}} = 0.032 \pm 0.022\%$) of the bolometric AGN output. These values are comparable to those of other AGN (Villar-Martín et al. 2016; Rose et al. 2018) and are roughly a factor of ten lower than the star formation rate. They are probably too low for the outflow to have a galaxy-wide effect. The broad outflow components are responsible for $\sim 2/3$ ($\sim 90\%$) of the mass outflow rate and about $90\%$ ($98\%$) of the kinetic power output.

References