ERRATUM TO

ASYMPTOTIC AND CONVERGENT FACTORIAL SERIES IN THE SOLUTION OF LINEAR ORDINARY DIFFERENTIAL EQUATIONS

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An error in the proof of the entitled article was kindly pointed out by Professor H. L. Turrittin; its correction introduces a limitation on the argument of ω in Theorem 1. To outline the correction in terms consistent with those of the article, let $v_\nu(z)$ correspond to a segment on the Puiseux diagram for (1) extending from $(\beta_1, m(\beta_1))$ to $(\beta_1+N, m(\beta_1+N))$—so that $s_0=(m(\beta_1+N)-m(\beta_1))/N$— and call

$$p_{\beta_1,-m(\beta_1)}h^N + \cdots + p_{\beta_1+N,-m(\beta_1+N)}(h)^0 = 0 \tag{11}$$

the characteristic equation. Thus (11) has one root h_ν which relates to the considered particular solution. Substitutions (4) and (5) convert (1) to a differential equation for $v_\nu(z)$ in which the analogue of (11) has roots $(h_1-h_\nu), \cdots, (h_N-h_\nu)$ if $h_1, \cdots, h_N$ are the roots of (11). For definiteness, let m of (4) be the least positive integer making (ms_0) an integer or 0. Then the $a_{\nu,\mu}$'s of (3) and later equations are defined as the product of a gamma function and the solution of a difference equation of Poincaré type (reference of footnote 6, chap. XVII), and the characteristic equation for this difference equation has $(h_1-h_\nu)^{-1/m(s_0+1)}, \cdots, (h_N-h_\nu)^{-1/m(s_0+1)}$ as its roots. The $a_{\nu,\mu}$'s are a particular solution for which $\lim_{\mu\to\infty}(a_{\nu,\mu+m(s_0+1)}/a_{\nu,\mu})$ is one of $(h_1-h_\nu)^{-1}, \cdots,$ or $(h_N-h_\nu)^{-1}$, if it exists—we conjecture that this limit is one value among those of $(h_1-h_\nu)^{-1}, \cdots,$ and $(h_N-h_\nu)^{-1}$ having the largest modulus. If α represents the argument of this limit we have, as a final result, that the convergence in Theorem 1 necessitates the additional restriction on arg ω:

$$\left|\arg\omega - (\alpha + M\pi)/m(s_0+1)\right| < \pi/2m\left|s_0+1\right|$$

(where M = odd integer).