ERRATUM

SINGULARITIES IN GENERAL RELATIVITY

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An independent computation of the field equations on pp. 295 - 296 has shown that two numerical mistakes are contained in equation (F.22.2) and, consequently, also in (I.2.2) and (I.4.2). The correct form of these three equations is as follows

$$\begin{aligned} & \frac{1}{2} \ddot{q} + \frac{1}{2} \dot{h}\dot{\beta} + \frac{1}{2} \dot{q}(\dot{\alpha} + 3\dot{\beta}) + \frac{1}{2} \dot{s}\dot{\beta} - \kappa_1^2 e^{-2\beta} [\ddot{\beta} + \dot{\beta}(\dot{\alpha} + \dot{\beta})] \\ & + e^{-2\beta} [-h^2 - q^2 - s^2 + 2hq + 4qs - 3\theta + \Pi - 5\Sigma] \\ & + \kappa_1^2 e^{-4\beta} [2q + 6s - 12b - 3n\dot{\alpha} + 2n\dot{\beta} - 3\dot{n}] + \kappa_1^2 e^{-6\beta} [2\kappa_1^2 \\ & - 2n^2] = e^{-\alpha - 2\beta} [k_2 - \frac{1}{2}(\dot{h} + \dot{q} + \dot{s}) - \frac{1}{2} \kappa_1^2 e^{-2\beta}] \end{aligned} \quad (\text{F.22.2})$$

$$\begin{aligned} & \frac{1}{2} h(\dot{h} - \dot{q}) + \frac{1}{2} s(\dot{s} - \dot{q}) + \theta(\dot{\alpha} - \dot{\beta}) + \dot{\theta} - \frac{1}{4} \dot{\Pi} + \frac{5}{4} \dot{\Sigma} \\ & + \kappa_1^2 e^{-2\beta} [2(\dot{\beta} - \dot{\alpha})(2b - s) - \frac{1}{2} \dot{h} - \frac{1}{2} \dot{s}] + \kappa_1^2 e^{-4\beta} [\kappa_1^2 (\dot{\alpha} + \dot{\beta}) \\ & - n(\dot{h} - \dot{q} - \dot{s} + 4b + \dot{n} - 2\dot{\beta}n)] + \kappa_1^4 n e^{-6\beta} = 0 \end{aligned} \quad (\text{I.2.2})$$

$$- \dot{\beta}\dot{h} - \frac{1}{2} \dot{q}(\dot{\alpha} + \dot{\beta}) - \frac{1}{2} \dot{s}(\dot{\alpha} + \dot{\beta}) + e^{-2\beta} [h^2 + q^2 + s^2$$

$$- 3hq + hs - 4qs + 4\theta - \Pi + 5\Sigma + \kappa_1^2 (2\dot{\alpha}\dot{\beta} + \dot{\beta}^2)] +$$

$$\begin{aligned}
& + \kappa_1^2 e^{-4\beta} [-4s + 4b + 4n\dot{\alpha} + 2\dot{n}] + 2\kappa_1^2 n^2 e^{-6\beta} \\
& = -e^{-\alpha-2\beta} [2k_2 - (h + q + s) - \kappa_1^2 e^{-2\beta}] \quad (I.4.2)
\end{aligned}$$

As a consequence, equation (4.23) turns out to be an identity, while (4.24) now becomes

$$\begin{aligned}
& 2\ddot{s} + 4\dot{s}\dot{\beta} + \frac{3}{2}\ddot{h} + \dot{h}(2\dot{\alpha} + \dot{\beta}) - h(\dot{\alpha}^2 + \dot{\beta}^2 + \dot{\alpha}\dot{\beta}) + e^{-2\beta}[3h^2 \\
& + \kappa_1^2(\dot{\alpha}^2 - 4\dot{\alpha}\dot{\beta})] + \kappa_1^2 e^{-4\beta}(3h - 8s - 8b) + e^{-\alpha}(\dot{\alpha}\dot{\beta} + \frac{1}{2}\dot{\beta}^2) \\
& + e^{-\alpha-2\beta}(k_2 + \frac{1}{2}h - 2s) + \frac{9}{2}\kappa_1^2 e^{-\alpha-4\beta} - e^{-2\alpha-2\beta} = 0 \quad (4.24)
\end{aligned}$$

Furthermore, it can be proved that all other combinations of field equations and initial conditions, which eliminate θ, Π, Σ , and Λ , result in identities. This means that it is not possible to obtain the coefficients of the higher powers from those of the lower powers in a simple iterative way, a difficulty already noticed by Nariai [1] in the case of a spherically symmetric field.

The proof of an inevitable occurrence of a point-singularity was based on equation (4.23), which, in fact, is an identity and therefore it is not valid.

REFERENCE

1. Nariai, (1966). *Prog. Theor. Phys.*, **35**, 786.