ERRATA

Erratum: “The General Class of the Vacuum Spherically Symmetric Equations of the General Relativity Theory” [JETP 115, 208 (2012)]

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In our article, an error was made. In metrics (15), function $y(t, r)$ is not arbitrary.

The statement before notation (11) is true when the expression following from formulas (10) is zero:

$$\begin{aligned} & 2x^2y^3\dot{x}(\dot{x}a - a\ddot{x}) \\ & + y^2(Ca\dot{x} + 2x((C+x)\dot{a} - x\ddot{x}x')) \\ & - x(C+x)y'y' + y(Cx' + x\dot{y}((C+x)a - x\ddot{x}x') - x^2\dot{x}^2y'). \end{aligned}$$

However, under the condition $(C+x)a - x\ddot{x}x' = 0$, equality (10b) is not fulfilled automatically. It means that the class of solutions (15) is necessary for specifying and investigating (10b).

Substituting (14) into (10b) and using (11), we obtain the equation:

$$\frac{\dot{x}[xF'(C+x)^2 + CFx'(3C+x(3-2F))] + 2Fx\ddot{x}'(C+x)(C+x-Fx)}{Fx^3\dot{x}x'(C+x+Fx)} = 0.$$

Its solution has the form

$$F = \frac{(C+x)^3}{x((C+x)^2 + \psi x^2\dot{x}^2)},$$

where ψ is any function of time.

Substituting the expression for F and Eq. (14) into (11) and (12), we define the metric functions:

$$\begin{aligned} y &= -\frac{\psi x(C+x)}{(C+x)^2 + \psi x^2\dot{x}^2}, \quad z = \frac{(C+x)^2 + \psi x^2\dot{x}^2}{xx'^2(C+x)}, \\ a &= \frac{x\ddot{x}x'}{C+x}. \end{aligned}$$

Then the corresponding class of solutions (taking into account notation (4)) becomes

$$\begin{aligned} ds^2 &= -\left(-\frac{(1+C/x)^2 + \psi\dot{x}^2}{\psi(1+C/x)}\right)dt^2 \\ &+ \frac{2\dot{x}x'}{1+C/x}dtdr + \frac{x'^2}{1+C/x}dr^2 + x^2d\Omega^2. \end{aligned}$$

Thus, the conclusion drawn in article that metrics (15) can be reduced to a static metric remains true in this case also.