2. $\dfrac{\partial^2 w}{\partial t^2} = \dfrac{\partial^2 w}{\partial x^2} + aw^n + bw^{2n-1}$.

Klein–Gordon equation with a power-law nonlinearity - 2.

1°. Solutions:

$$w(x,t) = \left[\frac{a(1-n)^2}{2(n+1)}(x\sinh C_1 \pm t\cosh C_1 + C_2)^2 - \frac{b(n+1)}{2an}\right]^{\frac{1}{1-n}},$$

$$w(x,t) = \left\{\frac{1}{4}a(1-n)^2\left[(t+C_1)^2 - (x+C_2)^2\right] - \frac{b}{an}\right\}^{\frac{1}{1-n}},$$

where C_1 and C_2 are arbitrary constants.

2°. For other exact solutions of this equation, see the nonlinear Klein–Gordon equation with $f(w) = aw^n + bw^{2n-1}$.

Reference

Polyanin, A. D. and Zaitsev, V. F., *Handbook of Nonlinear Partial Differential Equations* , Chapman & Hall/CRC, Boca Raton, 2004.

