



 $\frac{\partial^2 u}{\partial t^2} = \frac{a}{x^n} \frac{\partial}{\partial x} \left( x^n \frac{\partial u}{\partial x} \right) + u f(x, u^k w^m), \quad \frac{\partial^2 w}{\partial t^2} = \frac{b}{x^n} \frac{\partial}{\partial x} \left( x^n \frac{\partial w}{\partial x} \right) + w g(x, u^k w^m).$ 

Multiplicative separable solution:

$$u = e^{-m\lambda t}y(x), \quad w = e^{k\lambda t}z(x),$$

where  $\lambda$  is an arbitrary constant and the functions y = y(x) and z = z(x) are determined by the system of ordinary differential equations

$$ax^{-n}(x^ny_x')_x'-m^2\lambda^2y+yf(x,y^kz^m)=0,$$

$$bx^{-n}(x^n z'_x)'_x - k^2 \lambda^2 z + zg(x, y^k z^m) = 0.$$

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