Z tohoto dokumentu-listu , který jsem si odněkud opsal ….

Similar to last time, but now take $u \in C^2[(\mathbb{R}/\mathbb{Z})^n \times \mathbb{R}]$ and we have:

$$\triangle u - \partial_t^2 u = 0, \quad E(0) = \delta \ll 1 \tag{1}$$

where, as before we have:

$$E(t) = \frac{1}{2}\int_{(0,1)^n} \left\{ \left(\frac{\partial u}{\partial t}\right)^2 + \sum \left(\frac{\partial u}{\partial x_i}\right)^2 \right\} dx$$

where $(0,1)^n = (0,1) \times \ldots \times (0,1)$ denotes the n-cube and dx is the surface measure on $(0,1)^n$. We are required to disprove that (1) $\Rightarrow$ the energy evolves into $E = 1$ (where again we have chosen convenient units). It follows that:

$$\frac{dE}{dt} = \int_{(0,1)^n} \left\{ \frac{\partial u}{\partial t}\frac{\partial^2 u}{\partial t^2} + \sum \frac{\partial^2 u}{\partial t \partial x_i}\frac{\partial u}{\partial x_i} \right\} dx = \int_{(0,1)^n} \frac{\partial}{\partial x_i}\left(\frac{\partial u}{\partial t}\frac{\partial u}{\partial x_i}\right) dx$$

where we have used (1). A quick application of the divergence theorem and noting $u \in C^2[(\mathbb{R}/\mathbb{Z})^n \times \mathbb{R}]$ it follows that:

$$\frac{dE}{dt} = 0$$

Given $E(0) = \delta \ll 1$, we have disproved the proposition stated earlier. □

As a corollary, we conclude that AWT stands for Arm Waving Twaddle.

… jsem si tu připravil parciální derivace a …a poprosil bych dobré lidi, dobré matematiky k ověření a o dopsání otazníků podle pravidel matematiky (<u>ale i podle mého přání</u> a to do prosté symboliky „x“ se má k „t“ >tak a tak<)
… pomůže mi s tím někdo ?

$$\frac{\partial u}{\partial x} = \frac{x}{t} \cdot \frac{1}{x} = \frac{1}{t} \quad ; \quad \left(\frac{\partial u}{\partial x}\right)^2 = \frac{x^2}{t^2} \cdot \frac{1}{x^2} = \frac{1}{t^2} \quad ; \quad \frac{\partial^2 u}{\partial t^2} = \frac{x}{t} \cdot \frac{1}{t} = \frac{x}{t^2} \quad ; \quad \left(\frac{\partial u}{\partial t}\right)^2 = \frac{x^2}{t^2}$$

$$\left(\frac{\partial u}{\partial t}\right)^2 . dx = ? \quad ; \quad \left(\frac{\partial u}{\partial x}\right)^2 . dx = ? \quad ; \quad \left(\frac{\partial u}{\partial t} \cdot \frac{\partial^2 u}{\partial t^2}\right) . dx = ? \quad ; \quad \left(\frac{\partial^2 u}{\partial t . \partial x} \cdot \frac{\partial u}{\partial x}\right) . dx = ? \quad ; \quad \frac{\partial}{\partial x}\left(\frac{\partial u}{\partial t} \cdot \frac{\partial u}{\partial x}\right) . dx = ?$$

JN, 03.01.2007

… pomůže mi s tím někdo ?