OPINION

New estimation of the Boltzmann constant and the Planck constant

Kay Zum Felde

Felde KZ. New estimation of the Boltzmann constant and the Planck constant. J Pure Appl Math. 2023; 7(2):89

INTRODUCTION

We use the Einstein equation of General Relativity to compute the Planck constant h and the Boltzmann constant k.

Integration and computation

We compute h , k by means of Einstein's equation. Our metric is the description of the 4 dimensional spheres, i.e.:

$$x = r\cos\phi\cos\psi\cos\theta \quad (1)$$

$$y = r\cos\phi\cos\psi\sin\theta \quad (2)$$

$$z = r\cos\phi\sin\psi \quad (3)$$

$$ct = r\sin\phi \quad (4)$$

The L.H.S. of the Einstein equation,

$$G_{\mu\nu} = 8\pi T_{\mu\nu}, \quad (5)$$

Is yielding $G_{\mu\nu} = 1$. The stress energy tensor is derived from the second derivation of the Faraday tensor $F_{\mu\nu}$ w.r.t. to space time. We specialize on the simplest example with

$$T_{xy} = 0.5\partial_x\partial_y F_{xy} \quad (6)$$

$$= 0.5\frac{\partial^2}{\partial_\chi\partial_y}\omega_y r_z - 0.5\frac{\partial^2}{\partial_y\partial_x}\omega_\chi r_z. \quad (7)$$

We are using $\vec{\omega} = (-xy, xy, 0)$.

We receive:

$$1 = 8\pi\,\hat{s}_z \quad (8)$$

With $r_z = \hat{s}_z = \frac{\hbar}{2}$.

$\hbar = \frac{h}{2\pi}$ we receive after inserting into eq.:

$$h = \frac{1}{2}J\dot{s}. \quad (9)$$

Now in order to compute k we set:

$$T_{uv} = k\frac{\partial T}{\partial S}\log_2 n \quad (10)$$

with T is the temperature and $k\log_2 n$ being the entropy S. To estimate k

We have to solve:

$$G_{\mu\nu} d\mu = 8\pi\frac{\partial T}{\partial S}dS. \quad (11)$$

Calculating 11we receive with $\log n_2 - \log n_1 = 2 - 1 = 1$ with

$n_2 = 1, n_2 = 2,$

$$r = k\dot{8}\pi\frac{\partial T}{\partial S} \quad (12)$$

Integrating both sides is yielding:

$$r^2 = T^2. \quad (13)$$

We set $k = 1/8\pi J/K$. Thus the length of some material is growing if temperature is getting higher.

Independent scientist, Wiener Strasse, 13260599 Frankfurt am Main, Germany E-mail: kay13lalaguna@gmail.com

Correspondence: Kay Zum Felde, Independent scientist, Wiener Strasse, 13260599 Frankfurt am Main, Germany E-mail: kay13lalaguna@gmail.com
Received: Mar 27, 2023, Manuscript No. puljpam-23-6274, Editor Assigned: Mar 28, 2023, Pre-QC No. puljpam-23-6274 (PQ), Reviewed: Mar 29, 2023, QC No. puljpam-23-6274 (Q), Revised: Mar 30, 2023, Manuscript No. puljpam-23-6274 (R), Published: Mar 31, 2023, DOI:-10.37532/2752-8081.23.7(2).89.