In the cited paper author (R.K.) “proves” invalidity of the special relativity using invalid transformation formula(s) for the electromagnetic wave period (and the wavelength). This phenomenon is common in anti-relativistic texts: arguments against the special theory of relativity authors base on misunderstandings (misconceptions) of the theory.

**Keywords:** special relativity, misconception, time dilatation, coordinate transformation, Doppler effect, anti-relativists

**Comment**

Author [1] starts with the relation (here was different notation used, unprimed quantities are related to the source frame)

\[ T\nu = T'\nu' = 1 \]  

and then assuming obviously invalid relation

\[ c + \nu = \nu \]  

“proves” that (1), (5) and Doppler effect formula lead to the correct time dilatation formula of the special relativity. Such a “proof” is possible with errors in it, so, where is the error? It is in relation (7)

\[ T' = \beta T, \quad \beta = 1 / \sqrt{1 - (\nu / c)^2} \]  

If we introduce the factor (Bondi)

\[ k = \frac{1 + \nu / c}{1 - \nu / c}, \]

then correct formulas are

\[ \nu' = \nu / k, \quad T' = kT, \quad \lambda' = k\lambda. \]

From (7) it follows

\[ T'\nu' = \beta T\nu / k = \beta k \neq 1, \]
so, the author \([1]\) is obviously in error.

The time dilatation formula (7) is valid for a clock that rests in the source (unprimed) inertial reference frame. To see this it is enough to write the Lorentz transformations in the difference form (notice that in the source rest frame primed frame moves with the velocity \(-v\))

\[
\begin{align*}
x' &= \beta (\Delta x + v \Delta t) \quad \text{(a)} \\
\tau' &= \beta \left( \tau + \frac{v}{c^2} \Delta x \right) \quad \text{(b)}
\end{align*}
\]

and for the clock that doesn’t move in unprimed frame we have \(\Delta x = 0\), which means \(\tau' = \beta \tau\) (time dilatation formula).

But electromagnetic frame moves in unprimed frame. According to the fig. 1 we see that period of the wave is given as time difference of clocks that are separated in space by distance equal to the wavelength \(\lambda\).

From (a) we have

\[
\lambda' = \beta (\lambda + v T) = \beta (\lambda + \frac{v \lambda}{c}) = k \lambda,
\]

and from (b)

\[
T' = \beta \left( T + \frac{v}{c^2} \lambda \right) = \beta \left( T + \frac{v}{c} T \right) = k T.
\]

Now we see that the formula (7) is just erroneous in this situation, as it must be, it is based on erroneous assumption (5). There is no any contradiction in the special relativity theory, but we see here the author’s \([1]\) misunderstanding of the theory.
Conclusion

The special relativity theory is highly confirmed by numerous experiments. There is an explosion of anti-relativistic texts in articles, books, Internet, etc. My personal experience is that every such a text (till now) is based on some misunderstanding of the theory. Interesting, authors of such a texts are usually really persistent in their misconceptions. Here we have a typical misunderstanding about the time dilatation in special relativity which is easily to detect and correct.

Literature