

$$\Theta = \varphi / \chi$$

 $\Omega$ 

$$E = mc^2$$

 $\varphi$ 

$$U = v/x$$

$$\frac{a+b}{1+ab}$$

$$No(a) = -a$$

$$V = t/x$$

# Thinking Beyond Einstein

## *Exclusive Interview of*

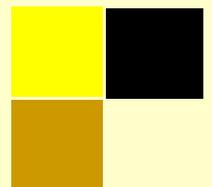
### Dr Mushfiq Ahmad

$${}_1R_0(\alpha) = 1/a$$

 $\Omega$  $\Theta$ 

$$(-a)(-b) = a.$$

$$\alpha.0 = 0$$

 $\varphi$ 

## Thinking Beyond Einstein

When we first read the news about the seminar arranged by Dr M Osman Gani Talukder and Dr Mushfiq Ahmad on their joint research on Alternative Theory of Special Relativity, we immediately sent an email to Dr Ahmad asking, “Did you publish your research in any Journal?” He responded promptly saying, “Yes, but in less known Journals.” This seminar was arranged in February, 2012 in Rajshahi, Bangladesh.

At that time, we did not even think of publishing anything on this subject matter. We expected that local and international media would highlight this issue, and eventually the acceptability of such an alternative theory would be put to a test by the scientists’ community. But regrettably, this did not happen.

In September 2011, a group of scientists at CERN announced to have observed that some Neutrinos traveled faster than light. This contradicted what Albert Einstein had said almost 100 years back. Such claim shocked the community of Physicists all over the world, and became a headline in the global news network. But the claim did not last long. CERN backtracked from its claim in June 2012, and corrected its earlier position saying that the experiment was flawed and the weird result was just due to some loose cable connections.

Then in October 2012, we learnt another two Mathematicians named Professor Jim Hill and Dr Barry Cox of the University of Adelaide, Australia, put forward some alternative thoughts that would bring changes in the way we understand the Theory of Special Relativity. This news compelled us to contact Dr Mushfiq Ahmad again and eventually we invited him for an interview, which he readily accepted.

IDEAS FOR DEVELOPMENT (IFD) is a virtual think-tank with few people on board. With little expertise in Physics, our first challenge was to send Dr Ahmad a set of questions that makes sense.

For this, we had to do some internet research to understand the subject, and to watch some documentary films available in the internet. Two of such films are “Faster than the Speed of Light?” aired by BBC, and “Einstein and  $E=mc^2$ ”, which is available at [www.topdocumentaryfilms.com](http://www.topdocumentaryfilms.com).

We were greatly benefitted from these two films. We strongly urge the general reader to conduct similar type of research before reading this interview.

We believe that the global community of scientists should take note of what Dr Mushfiq Ahmad is saying. It’s not a matter of who is right and who is wrong. It’s a matter of honoring some new thoughts that might reshape our understanding of the Universe and benefit mankind.

We conclude by saying that it is not important to us whether the alternative thoughts are true or whether these new thoughts are eventually accepted by the global community of scientists . What really matters to us is that a Physicist of the East has shown the capacity and the courage to think beyond anybody else; even beyond Albert Einstein!

We promote such thinking. This is our mission.

**Mabroor Mahmood**  
Founder  
IDEAS FOR DEVELOPMENT (IFD)  
[www.ideasfd.org](http://www.ideasfd.org)

# *Exclusive Interview of* **Dr Mushfiq Ahmad**

*Mushfiq Ahmad graduated with honours in Physics from Dhaka University in 1966 and obtained his Ph.D. from Rajshahi University, Bangladesh in 2010. He has taught Physics at Rajshahi University from 1974 to 2010. His present work is the result of years of thinking starting from the early 80s. A slightly modified version of his Ph.D. Thesis titled “Reciprocal Symmetry and Relativity beyond the Speed of Light” is available online.*

*Could you please tell us what do we mean by the Special Theory of Relativity and why is it so important?*

If a policeman shoots, from his chasing car, at the car ahead of it, the bullet goes faster by the speed of the chasing car. Not so in case of electromagnetism. If, instead of a bullet, the policeman lights a torch, the beam of the torch does not travel any faster because of the speed of the car. This was the message given by Michelson-Morley experiment (1887). They tried to detect the difference between the speeds of light along and against the direction of motion of the earth in its orbit. They found no difference.

To “explain”, Einstein postulated<sup>1</sup> that the speed of light is always the same; it is not affected by any motion.

Special relativity claims to give us a deeper understanding of nature (especially of motion) although, unlike nuclear physics or electronics, it has little impact on technology.

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<sup>1</sup> A postulate is like a legislative decree

Special relativity's prediction about space contraction, time dilation etc. (which gave rise to absurdities and limericks) has contributed greatly to its popularity. The following lines can be pertinent to this idea:

There was a young lady named Bright,  
Whose speed was far faster than light;  
She started one day. In a relative way,  
And returned on the previous night.

*Now please tell us why Einstein's Equation  $E=mc^2$  is so famous?*

Development of nuclear power is attributed to it, although Manhattan project (which made the first atomic bombs) was led by a team of Nuclear Physicists, such as Fermi, Oppenheimer, etc.

*According to the conventional wisdom, there cannot be anything which can move faster than light. What will be the problems if this does not hold in reality?*

Special relativity is built on Einstein's postulate which implies that nothing can travel faster than light. If it does not hold, relativity falls. That will shake our belief, for relativity has now risen to the level of a belief or a dogma.

*According to common understanding, if something moves faster than light, then time will go backward, and it will be possible for somebody to go back and kill somebody yesterday who is present today. Is that right?*

That seems right and it is absurd. Such absurd implications of the theory are called paradoxes. A course on special relativity, necessarily, includes resolution of paradoxes (twin paradox etc.) to find arguments to save the theory from absurd conclusions.

*Now what did you see in your research?*

If a beam of light takes no time (0 sec.) to reach a distant point, we shall say that light travels with an infinite speed. Infinity is greater than what we can measure. If we add anything to - or subtract anything from – “infinity”, it does not change; it remains infinity.

After adding a cup of water to the ocean, we cannot say that the ocean has one more cup of water now. The word “more” has no sense here. We did not know how many cups of water was there before, and how many cups now, so we cannot compare between them. Comparison is not possible between two unknown quantities.

According to Einstein's postulate, the speed of light behaves like infinity; it is not affected by addition or subtraction of another speed. Einstein's theory also treats the speed of light as a (finite) measurable quantity. There is a contradiction; a finite quantity behaves like an infinite quantity. To overcome this difficulty, Einstein developed a special law of addition called **Einstein's Law of Addition of Velocities**.

This mixes two types of spaces – Euclidean space and hyperbolic space. This is comparable to a British lawyer calculating his fees in Guinea, but taking it in pounds, so he gets paid more. The measured speed of light was finite in

Galilean space. Using Einstein's law of addition means it is translated (projected) into hyperbolic space. In this space (after the translation), it becomes infinite. Einstein's postulate that the speed of light is the highest remains true, but becomes trivial. It becomes equivalent to saying that nobody can travel faster than infinity.

Our work helps remove these mathematical obscurities.

*Now how will you explain the resolution of the problems mentioned above if something like Neutrino moves faster than light?*

Special relativity, as it is understood, will collapse, and it cannot be salvaged.

As we see it, special relativity treats the speed of light as infinite, but wrongly calls it finite. The speed of light, usually represented by  $c$ , is infinity translated in hyperbolic space, where it looks finite.

*Does your research predict that something can move faster than light?*

It is not important to us.

If the mathematics is properly understood,  $c$  of special relativity represents the (unattainable) upper bound speed. Calling  $c$  the speed of light is equivalent to saying that light travels with infinite speed.

*Does this mean that Einstein's theories had some weaknesses, which could be resolved with the help of your equations? If this*

*is true, what were those weaknesses, and how these will be resolved?*

We have just mentioned an important misunderstanding in the theory of relativity. Our work will bring the correct understanding.

Einstein's law of addition has another serious mathematical fault. If we have to add three velocities, we shall add two first and add the third to it. The addition should be associative<sup>2</sup> i.e. the result should not depend upon which of two we add first. Einstein's law of addition is not associative. We have proposed an associative law of addition<sup>3</sup>.

*Is the faster than light property applicable for Neutrino alone, or any other particle?*

So far no particle faster than light has been detected.

*It might be a layman question for you, but we won't mind asking this question. Can Neutrino's speed be variable or it is always constant?*

No constant speed is attributed to Neutrinos.

*To what extent we know about all the properties of Neutrino?*

Neutrino is a very elusive particle, and there are many types of Neutrinos. Not everything is known about them.

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<sup>2</sup> Mushfiq Ahmad and Mohammad Shah Alam, Relativistic Requirement And Comparison Between Reciprocal Symmetric Transformation and Lorentz Transformation. Physics Essays 22, 2 164-167 (2009). DOI: 10.4006/1.3114542

<sup>3</sup> Mushfiq Ahmad. Mocanu's Paradox and Quaternionic Transformation as the Answer. Hypercomplex Numbers in Geometry and Physics, 1 (17), Vol 9, 2012, pp. 60-64

*As per the contemporary understanding of the physicists all over the world, Einstein's theory does not hold in some cases, like in black holes and during the moments after the big bang. Now will your new equations in some way contribute to the reduction of such gap of understanding?*

Black hole etc. belong to the domain of general relativity. So far we have talked about special relativity only. Misunderstandings and faults in special relativity have their impact on general relativity. Corrections in special relativity will remove many difficulties of general relativity.

*Will your equations be able to reduce the incompatibility between the Quantum Mechanics and Relativity?*

Incompatibility between the quantum mechanics and relativity is one of the major problems theoretical physicists are facing today. We have shown that quantum mechanics and relativity are reciprocally related (like the relation between  $x$  and  $1/x$ ).

[Einstein's postulate sets an upper bound (to the speed of light). Planck's hypothesis sets a lower bound (to the quantity of energy transferred)]. If  $x$  has an upper bound,  $1/x$  has a lower bound. Einstein's postulate and Planck's hypothesis seem to be reciprocally related<sup>4</sup>. If a particle travels with velocity  $v$ , the corresponding de Broglie wave travels with velocity  $v^*=c^2/v$  so that  $v^*/c=c/v$ . We find that particle velocity and de Broglie are reciprocally related<sup>5</sup>.

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<sup>4</sup> Mushfiq Ahmad. Reciprocal Symmetry and Correspondence Between Relativistic and Quantum Mechanical Concepts. Marcel Grossmann Meeting. [www.icra.it/MG/mg12/talks/sqg5\\_ahmad.pdf](http://www.icra.it/MG/mg12/talks/sqg5_ahmad.pdf)

<sup>5</sup> Mushfiq Ahmad, "Reciprocal Relation between Special Relativity and Quantum Mechanics and Correspondence between Continuous and Discrete Motion," International Journal of Applied Physics and Mathematics vol. 2, no. 5, pp. 336-337, 2012. DOI: 10.7763/IJAPM.2012.V2.127

If this is understood, we hope the incompatibility will disappear.

*As we already know, the physicists in CERN<sup>6</sup> calculated the speed of Neutrino and found that it was little bit faster than light. Then they became so astonished that they tried to find out if there was any error in calculation. But they did not find any error. Then they published the results, which became big news all over the world. However, later CERN backtracked from their earlier results and announced that there were some loose cables, which was responsible for such weird results. Are you aware of such new announcement?*

Yes we are aware. These findings (right or wrong) have no impact on our mathematical work.

*Now if you claim that mathematically you have proven how a particle can move faster than light, how will it fit with the new announcement?*

I hope, by now, it is clear that we are not saying anything for or against a particle traveling faster than light. **We do not need Einstein's postulate.** We are replacing it by Reciprocal Symmetry, which is a much deeper and broader principle. We have derived<sup>7</sup> Einstein's law of addition of velocities from the principle of Reciprocal Symmetry.

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<sup>6</sup> CERN stands for European Organization for Nuclear Research. It is based in Switzerland.

<sup>7</sup> Mushfiq Ahmad. Reciprocal Symmetry and its Relation to Einstein's Postulate, Lorentz Transformation and Discreteness. J. Sci. Res. 1 (2). 270-274 (2009). DOI: 10.3329/jsr.v1i2.1875

*Now let us ask you some questions about the past of your research. When did you first start to think about the extended equations of Theory of Special Relativity? Which year was that?*

I started thinking about it in early 80s. In 1982, I talked about it to Professor Chandrasekhar at Chicago. He was noncommittal and said, “You can’t expect me to be a revolutionary at this age.” At that time, he was about 75. Professor Morikawa of New York University was very enthusiastic. Also in 1982, I wrote about Reciprocal Symmetry to Professor Finkelstein of Georgia Tech. In his reply, he wondered how it could be extended to the case of general motion; at that stage it was developed for one dimensional motion only.

*Then what did you do? When did you first publish the paper?*

Some papers first appeared in arXiv.org<sup>8</sup> in 2006. Then in 2009 in an AIP approved Canadian Journal named “Physics Essays”.

*When did you decide to arrange a seminar on your findings?*

The idea of a seminar came in late 2011.

*Was it impacted by the announcement made by the CERN on Neutrino’s speed?*

CERN’s announcement was important. It drew the attention of scientific community to this field and prepared the ground for presenting our work.

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<sup>8</sup> arXiv.org is a an e-print service in the fields of physics, mathematics, computer science, quantitative biology, quantitative finance and statistics. Submissions of arXiv is owned and operated by Cornell University, USA.

*From whom did you receive financial and logistics assistance to arrange the seminar?*

It was a very slim budget. The support came from Rajshahi University and some individuals.

*Who were the attendees of the seminar?*

There were participants from Bangladesh, India and Germany.

*How were the reactions of the attendees when you presented your findings?*

Some of them showed much interest. One Indian participant talked about it to his Indian colleagues, on his return; and they asked for the papers.

*Did you then share your findings with any global body like CERN or any other organization?*

Some more papers have been published.

*Did you try to publish the paper in any other renowned journal? Please tell us the names.*

Traditional journals are very cautious about publishing anything against Einsteinian belief. Hyper Complex Numbers in Geometry and Physics (a Russian journal) has published a paper. Before publishing, the editor asked us to present the paper in a modest language, meaning that nothing should be said against Einstein.

*How did the Journals react when they received your paper?*

Usually they turn down without much explanation. Proceedings of the Royal Society A. published Hill & Cox's paper titled "Einstein's special relativity beyond the speed of light", but rejected our paper although, our paper covers the general case and maintains Lorentz invariance, while the paper of Hill & Cox is for one-dimensional case only, and does not maintain Lorentz invariance.

*There is a Theory called "Theory of Everything". Nobody has forwarded such a theory, however, there is a consensus amongst all Physicists that someday there will be a Theory of Everything, which will be able to explain all the contradictions, and will be able to solve all the puzzles that remain to date. To what extent your extended equations contribute to reach a point where we will be able to have a "Theory of Everything"?*

An important step toward this goal is to resolve the difference between quantum mechanics and relativity. We have talked about it.

*Very recently two Australian Mathematicians expanded Einstein's equations to prove what happens if something moves faster than light? Have you read their paper? Any comment?*

The essential part of their work is a part of what we have done. There is much similarity between their paper and some of our papers. Some of our work is already published, but not in very reputed journals, and (probably) not known to the Australian authors. They have invoked reciprocal symmetry which we have studied in detail. They have studied only the 1-dimensional case. We have studied the general case. As we

have said before, The Proceedings did not agree to publish our paper.

*In order to help your extended equations accepted all over the world, there is a need of sharing such knowledge through presenting such findings in various conferences. Are you planning to present your findings in any such conferences?*

We are sending our work for publication. Some of our papers are already published, but not in very reputed journals.

*Can such a conference be arranged in Bangladesh?*

Conferences can be arranged, and we would like to do it.

*But in order to bring renowned Physicists to Bangladesh, you need to have enough financial resources to bring them with Business Class tickets and accommodate them in five star hotels for at least a week. From where can you have such resource? Do you have enough money to arrange such an international conference?*

We lack the necessary financial support.

*In that case, are you open to seek or accept assistance from the Government of Bangladesh, particularly from the Ministry of Science & Technology?*

Getting finance from the Government is not an easy task.

*Albert Einstein contributed a lot to help us understand the way we see the Universe today. His findings are considered to be amongst the major breakthroughs in Physics. Now if your new*

*equations are accepted by all, do you think that a similar major breakthrough will be recorded in the history of mankind?*

Our work is important. It will greatly influence the future course of Physics.

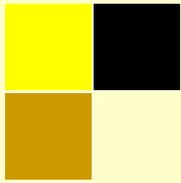
*Now our last question is about that popular equation  $E = mc^2$ , which was placed by Albert Einstein almost 100 years back. According to your finding, how will this equation look like?*

We do not see an immediate modification to it, but the way of understanding it will probably change.

*Thank you very much for the interview.*

Thank you.

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## IDEAS FOR DEVELOPMENT (IFD)

IDEAS FOR DEVELOPMENT (IFD) is a virtual think-tank. This initiative was first conceptualized through an email on January 18, 2007. This think-tank does not have any office; its website and email address are its identity. Mr Mabroor Mahmood, an expatriate Bangladeshi national living in Saudi Arabia, is the founder of this think-tank. IFD is his brain child.

The prime objective of this think-tank is to ensure the welfare of the humanity through the exchange of development related ideas with the help of the Internet. This is the mission statement of this think-tank.

This mission statement is also reflected in its logo. The logo comprises four colored blocks, denoting four dominant races in the world. IFD believes that the persisting inequality amongst nations is the root of continuing global tension and absence of peace all over the world. So IFD believes that such tensions will be significantly reduced if this inequality can be resolved.

But we need new development ideas to resolve such inequality. At present, the developed nations are consistently formulating new ideas with the help of research and moving forward through their successful implementation. However, the less developed countries are lagging behind due to either the lack of resources or indiscriminate wastage of such resources. This phenomenon causes the gradual expansion of inequality between the developed and less developed nations, and as a result, poverty and exploitation are increasing all over the world.

IFD has been created with a noble aim to reduce this disparity amongst nations with the help of generating new ideas. IFD wants to be the platform for exchanging ideas of all thinkers and creative people of the world. We expect the thinkers all over the world would exchange their ideas through this platform.

A potential thinker will receive some specific benefits if he/she exchanges his/her ideas through the IFD.

First of all, the generation of an idea only is not sufficient to ensure development; in fact it is only the beginning of a long process. A thinker should not stop after generating an idea, rather he also needs to describe in detail the solution of the problem in the form of a model. This model has to be implementable as well. Otherwise, this idea won't have any value.

We actually don't have any shortage of people having new ideas. But we really lack people who can provide us a nicely presented idea, which is also worthy for implementation.

To resolve this problem, IFD will guide a potential thinker on how to present an idea in a logical fashion. IFD will also give necessary guidance in this respect, and provide the required assistance to make a potential yet immature idea presentable.

Secondly, one does not need any qualification to send an idea to IFD. Any person can send an idea to IFD from anywhere with the help of any medium.

Thirdly, although IFD is temporarily focused on exchanging economic ideas only, eventually its activity would also expand to cover other disciplines as well.

Fourthly, if an idea is publicized by the IFD, everybody would be ensured of its reliability and its power to change the society in the right direction. It will enhance the credibility of the idea itself. It has to be highlighted that IFD will not publicize any idea that it will receive. The selection of an idea for publication will entirely depend on its ability to contribute to the welfare of the society.

And fifthly and the most important benefit is that, the potential thinkers won't have to spend any money for sending an idea to IFD, except for the charges for email or postage. S/he won't also have to give any money to IFD if the idea is eventually published in IFD website.

One might ask, if a potential thinker gives us a valuable idea, it might eventually be stolen. As a result the true inventor of the idea would lose his/her proper recognition. Then what is the protection for the owners of the idea?

In this connection, we assure you that we won't publish your idea anywhere else under a different name without your permission. We strongly believe that an idea generator can be properly valued only by another idea generator.

IFD believes an idea is properly valued when it is implemented, either partially or completely, and benefits the people. IFD has a limitation from this perspective. It is because in order to implement an idea successfully, one needs assistance from Government bodies or other organizations. Therefore, IFD cannot guarantee that the circulation of an idea through the IFD will ensure its successful

implementation. IFD intends to act as a platform for circulating and publishing the ideas only. IFD will not be responsible for implementing these ideas.

But IFD's activity will not be limited only to generation and publication of an idea. In order to generate new ideas and ensure its successful implementation, we not only need prospective thinkers, but also need proper political leadership, strong Government apparatus, modern education system, and above all, a peaceful political and social climate. Prospective thinkers will not be born unless proper environment is ensured, and their ideas will not be properly valued and implemented in an unstable social and political atmosphere.

So besides circulating development related ideas, IFD would also act to ensure an environment where the number of prospective thinkers will increase, they will be properly valued, and their ideas will be successfully implemented. To serve this purpose, IFD will publish special articles highlighting various social issues.

At last, we want to say if you are confident on any prospective idea, and firmly believe that this idea, if implemented, will benefit the society to an extent, then we request you to send us this idea. You can primarily send us an email in our address. You can also visit our website to know more about us.

We believe such exchange of ideas would help to develop prospective thinkers all around us. Everybody will also be benefited if their ideas are eventually implemented successfully. So we need cooperation from all for moving forward. We thus welcome any cooperation in order to exchange these development related ideas through the IFD.

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