



## Theory of unidirectional and bidirectional forces and violation of third law of motion

**Debjoyti Biswadev Sengupta**

*Smt. Sulochanadevi Singhania School, India  
E-mail: [debjoyti.sengupta.manutd@gmail.com](mailto:debjoyti.sengupta.manutd@gmail.com)*

It is thought that there are various contact forces and three non-contact forces which exist in the universe, namely the electrostatic force, the magnetic force and the force of gravitation. As per this theory, it is considered that the force of gravitation is the most mysterious of all the non-contact forces. There are few things which neither the Newtonian concept of physics, nor the modern concept of physics has been able to explain, as far the force of gravitation is concerned. The author hypothesizes that these unanswered queries may be answered if we explain the non-contact forces in terms of their conventional direction/nature of the forces. Hence, the idea of unidirectional and multidirectional forces is perceived. The author shall also discuss about his experimental proof, design of the experimental apparatus and the resulting chemical bonding theory from this new concept of perceiving non-contact forces. The author will also discuss about the nature of gravitational force and the reasons for its nature.

It is thought that there are various contact forces and three non-contact forces which exist in the universe, namely the electrostatic force, the magnetic force, and the force of gravitation. As per this theory, it is considered that the force of gravitation is the most mysterious of all the non-contact forces. There are few things which neither the Newtonian concept of physics, nor the modern concept of physics has been able to explain, as far the force of gravitation is concerned. The author hypothesizes that these unanswered queries may be answered if we explain the non-contact forces in terms of their conventional direction/nature of the forces. Hence, the idea of unidirectional and multidirectional forces is perceived.

Unidirectional forces can be defined as those forces which are either completely attractive in nature or completely repulsive in nature or is acting only towards a single direction. These forces have got their name from their characteristic of acting only in one direction. Characteristics of Unidirectional Forces

- Unidirectional forces are ideal forces, better known as pseudoforces.
- Such forces do not exist in the universe. They exist only in the Earth.
- These forces are unperceivable by the human body.
- They are either completely attractive in nature or completely repulsive in nature or act only in one direction.
- Unidirectional forces are in accordance with Newton's Third Law of Motion which is stated in his book „Principia Mathematica” as “Lex III: Actioni contrariam semper et æqualem esse reactionem: sive corporum duorum actiones in se mutuo semper esse æquales et in partes contrarias dirigi.” (in Latin) Translated to English, this reads: “Law III: To every action there is always opposed an equal reaction: or the mutual actions of two bodies upon each other are always equal, and directed to contrary parts.”

Usually, all pseudo forces fall under the category of unidirectional forces. The force which is the most apt example of a unidirectional force is centrifugal force which is a pseudoforce, acts only in one direction, is unperceivable by the human body and obeys Newton's Third Law of Motion. Unidirectional forces do have exceptions. The most apt example of a force which can be considered as a unidirectional force is the force of friction, which is a real force but acts only in the direction opposite to the applied force to resist the motion of the body. Thus, contact forces can be considered as unidirectional forces.

Multidirectional forces can be defined as those forces which are attractive as well as repulsive in nature or is acting towards two directions at the given instant of time. These forces have got their name from their characteristic of acting in both directions and their dual nature. B. Characteristics of Multidirectional Forces

- Multidirectional forces are real forces.
- Such forces do exist in the universe.
- These forces are perceivable by the human body.
- They are attractive as well as repulsive in nature and is acting towards two directions.
- Multidirectional forces are in violation with Newton's Third Law of Motion which is stated in his book „Principia Mathematica” as “Lex III: Actioni contrariam semper et æqualem esse reactionem: sive corporum duorum actiones in se mutuo semper esse æquales et in partes contrarias dirigi.” (in Latin) Translated to English, this reads: “Law III: To every action there is always opposed an equal reaction: or the mutual actions of two bodies upon each other are always equal, and directed to contrary parts.” It is found that multidirectional forces are not in accordance with Newton's Third Law. All noncontact forces are multidirectional in nature. The most apt example of a multidirectional force is the electrostatic force. It is found that these forces obey a different law.

**Bottom Note:** This work is partly presented at 5th World Congress on Physics July 17-18, 2018, Prague, Czech Republic