Computing the Net Optical Force on Molecules Using Cubal Constant ARJUN KRISHNAPPA, None — Calculating the net optical force (Gaussian beam) on molecules that are enclosed by a sphere, requires rigorous mathematical steps and consumes more time. Also it is complex to compute the total force on molecules that are on a sphere. As a result the easy approximate way of calculating the net force is by assuming the sphere as a cube, which reduces the complexity. One disadvantage with this method is that the net force is not the actual force, but the approximated force. Interestingly, this research has determined a constant that relates the sphere and cube called "Cubal Constant." Based on this constant, two laws have been proposed: Cubal Volume Law and Cubal Surface Law. Cubal Volume Law can be used for determining the net force on molecules in the sphere, whereas Cubal Surface Law is used to compute the force on molecules which are on the sphere. Using these two laws, the exact net force on molecules which are in/on the sphere can be calculated by just calculating the force on molecules which are in/on the cube. These two laws can be treated as force laws, so this can be extended to many other applications that involve forces. The constant and laws are theoretically and experimentally verified.

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