# PHYSICS COLLOQUIUM

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# SIMPLE? . . . COMPLEX? . . . CORRELATION!

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**Abstract**: Though in our daily lives we try to make things simple, we also try to understand things around us, usually complex things. All these things are made of molecules and atoms. In molecules and atoms correlation occurs because electrons are not independent one from the other. This electronic correlation determines much of the structure and dynamics of multi-electron systems, i.e. how complex electronic systems are made from single electrons. The simplest multi-electron systems are the ones consisting of a nucleus of charge $Ze$ and two electrons; examples are the negative hydrogen ion $H^-$ ($Z = 1$), the helium atom He ($Z = 2$), the singly ionized lithium atom $Li^+$ ($Z = 3$) and so on.

Electron correlation can be studied through the single and double ionization of two-electron systems. One way of achieving ionization is by Compton scattering. In this talk I will present some calculated results of single ionization cross sections of the helium atom and the negative hydrogen ion by Compton scattering.

***Refreshments will be served.***