**Motivation**
- Dual-frequency drives have been used to independently control ion density and average ion energy. It is natural to extend this idea using triple-frequency drives.

**Research Objective:** A model consists of a series of simple computational steps that result in accurate ion energy, ion angle, neutral energy, and neutral angle distributions (IED, NED, IAD, NAD, respectively) at the wall given the input parameters. In addition, it predicts the ion driving signals needed to give particular distributions.

**Previous Work:** A model is being developed to predict the IED from the voltage, current, and power measurements of the discharge.

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**Description of Model**
- Sheath voltage $V_s(t)$ from particle-in-cell (PIC) simulations
- Fourier transform $V_s(f)$ to get $V_s(f)$, the voltages time response
- Apply filter to $V_s(f)$ to get $V_s(f)$, the voltages time response

**Type of Model:**
- Argon gas
- 1-D planar capacitive discharge model

**Collisions and Neutral Distributions**
- Charge exchange data from PIC (40 V/64 MHz)
- In no scattering model, neutrals hit substrate without further interaction.
- $E_{ci} = E_{ci}$ and $E_{i} = E_{i}$
- In scattering model, neutrals equally share energy in collision on a distance equal to mean free path $\lambda$.

**Angular Distributions from PIC**
- IAD
- NAD

**Future Goals**
- Given the collisionless IED and IAD, develop a model to determine the collisional IED and IAD and verify with PIC simulations.
- Extend our current model of determining the NED from the collisional IED to determine the IAD and verify with PIC simulations.
- Apply our models and simulations to 2D geometry.