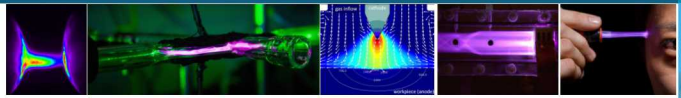
SAND2018-7700C

Plasma Diagnostics, Modeling, and Control



PRESENTED BY

Zak Eckert

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4 August 2018

Tools of the Trade

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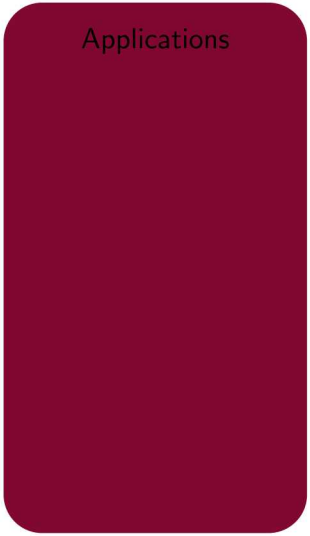
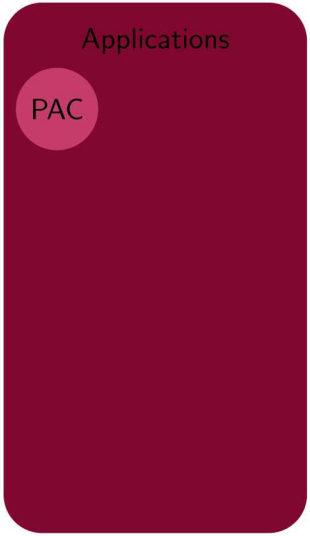


Quantity of Interest in
the Application Space

Tools of the Trade



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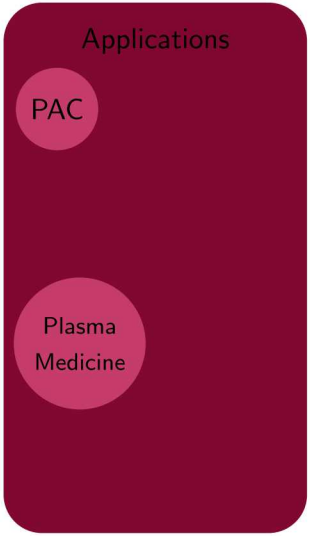

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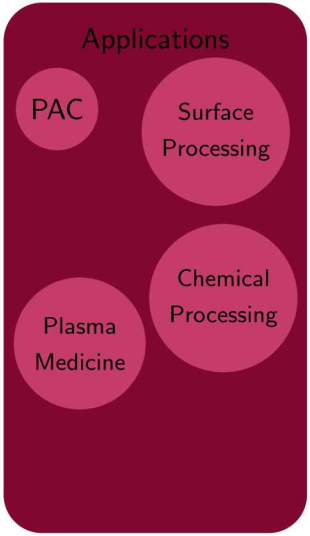

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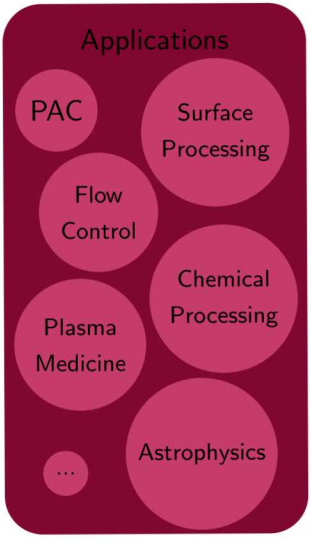

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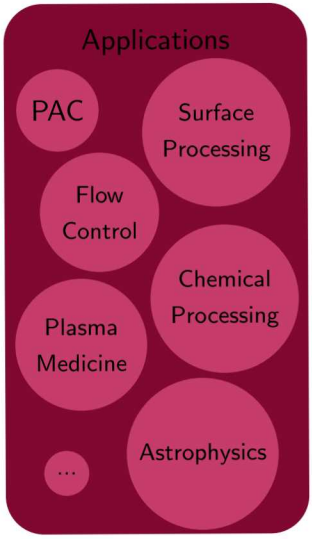
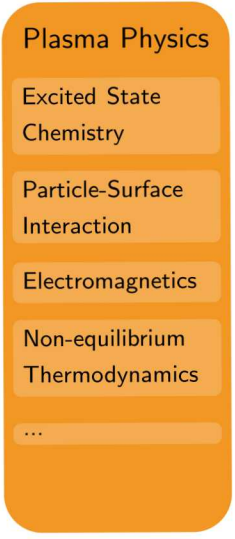
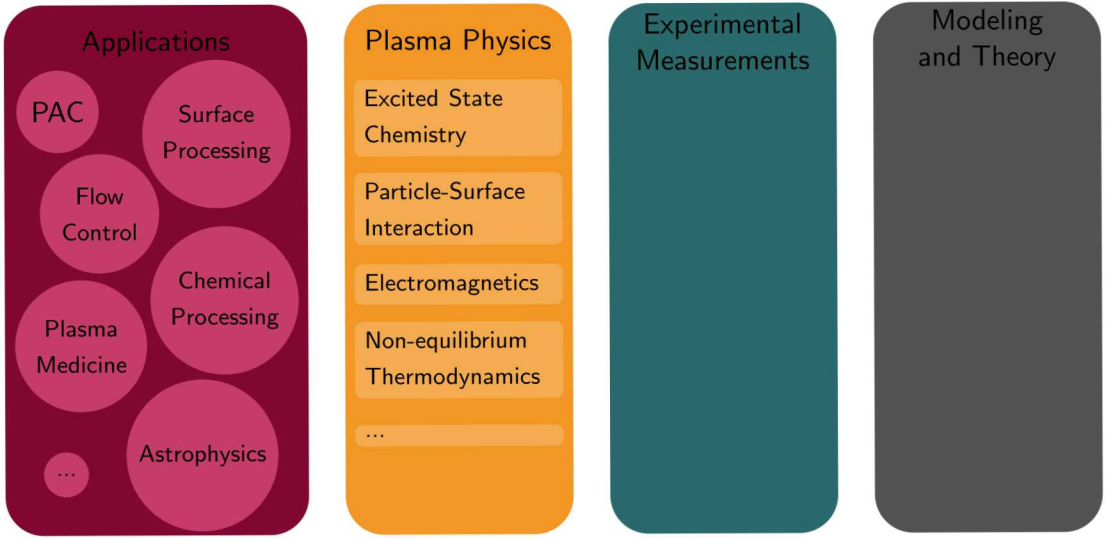




Quantity of Interest Depends on the Underlying Physics

Tools of the Trade



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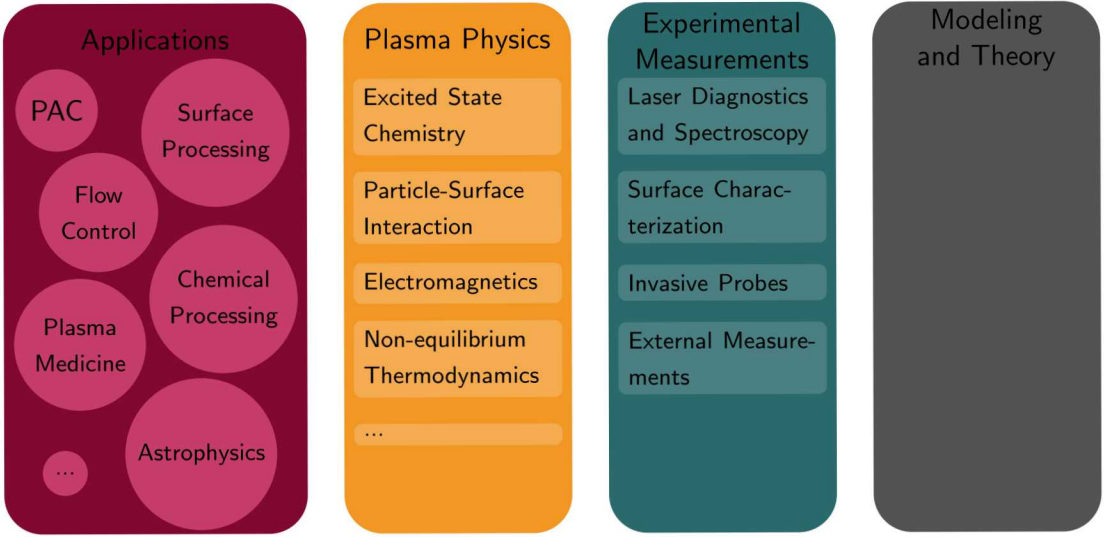

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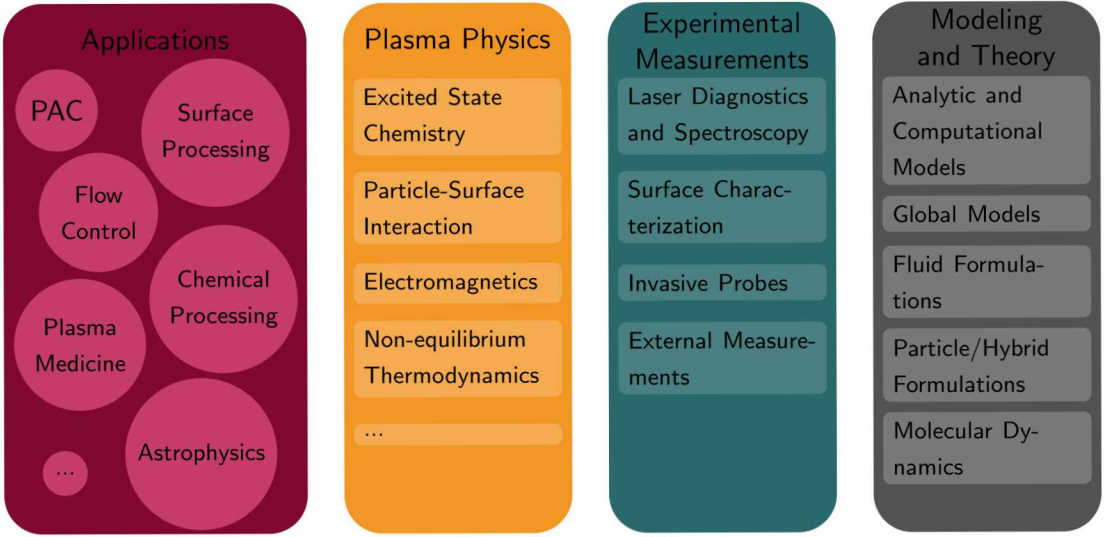

Right Tool for the Job

Experimental Measurements

Modeling and Theory

Right Tool for the Job

Experimental Measurements

Langmuir Probes in the Ionosphere

Modeling and Theory

Right Tool for the Job

Experimental Measurements

- Langmuir Probes in the Ionosphere
- Second Harmonic Generation E-Field Measurements

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- New Theories and Reduced Order Models (e.g. SLPIC)

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- Leads to many researchers with powerful but relatively narrow capabilities

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Experimental Measurements	Modeling and Theory
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Second Harmonic Generation E-Field Measurements	New Theories and Reduced Order Models (e.g. SLPIC)
Sum Frequency Generation for Liquid-Plasma Interface Measurements	Higher Quality Free and Open Source Software

- New diagnostics/models are expensive and time consuming to build
- Leads to many researchers with powerful but relatively narrow capabilities
- Increases the importance of collaboration

Synergy of Measurements and Modeling

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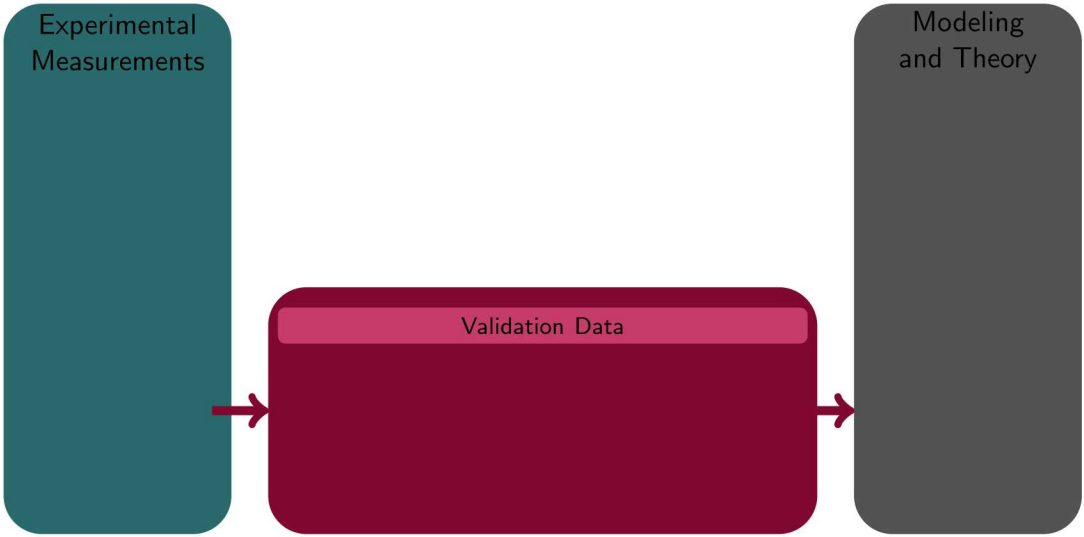

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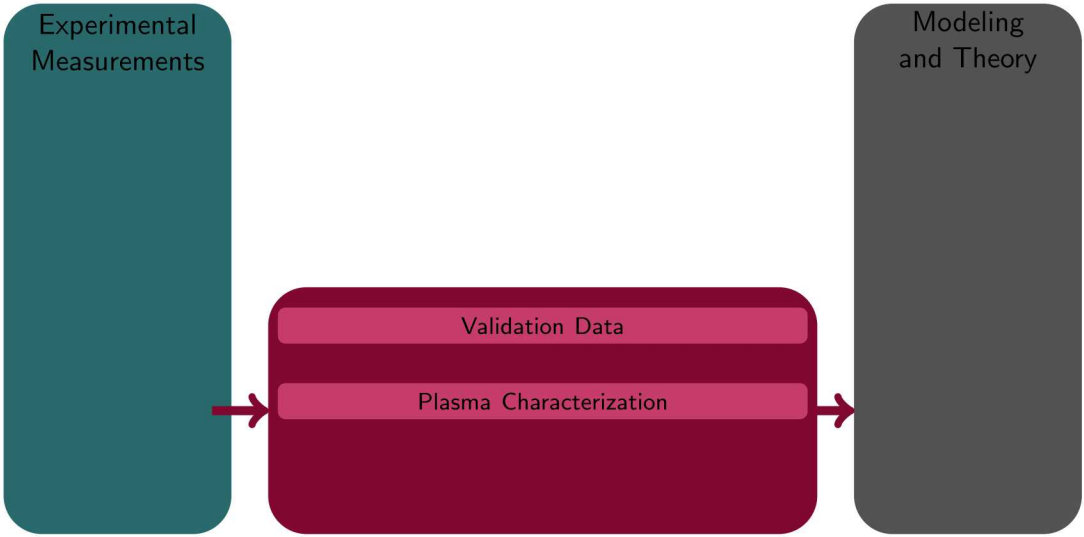

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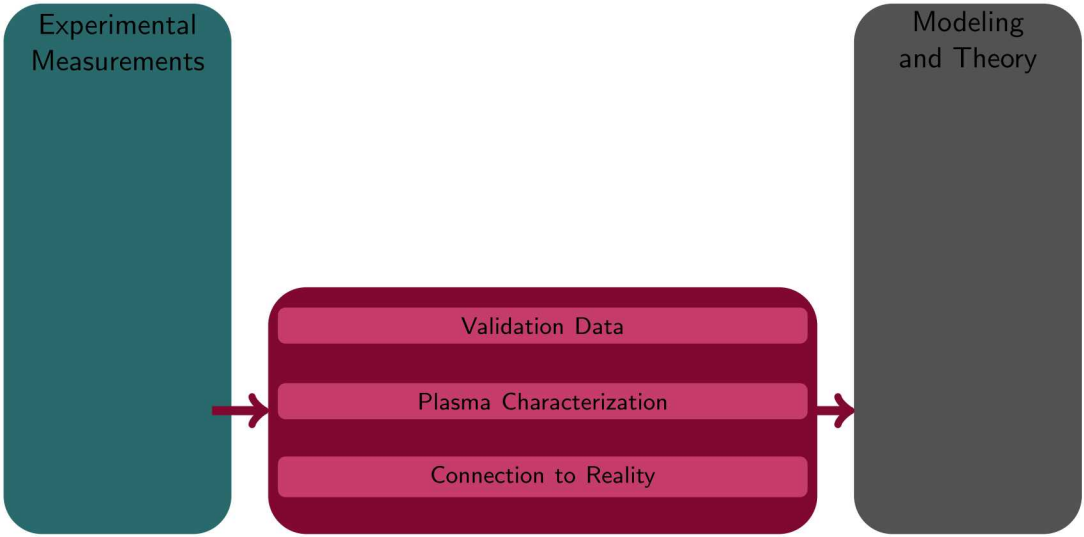

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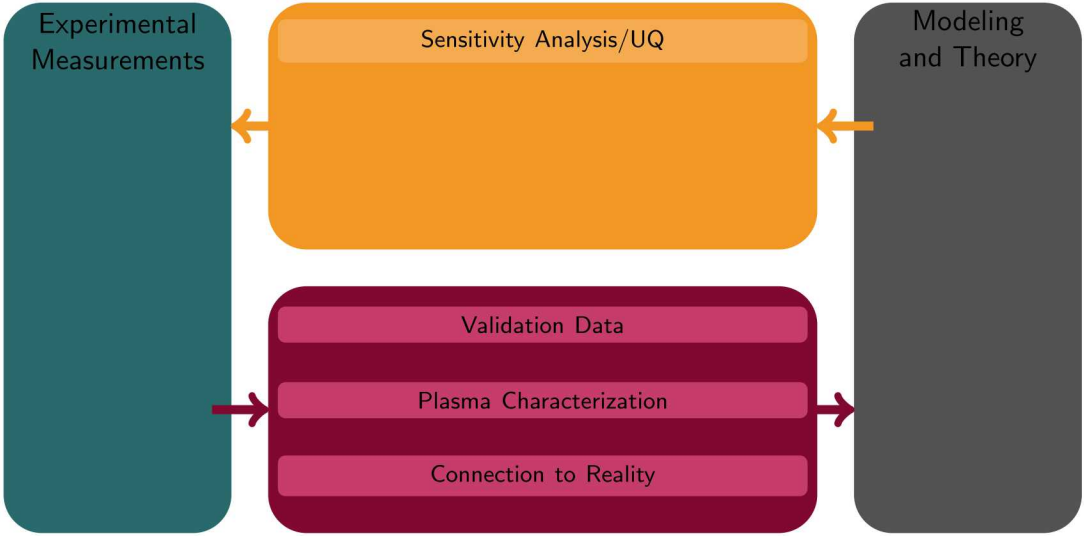

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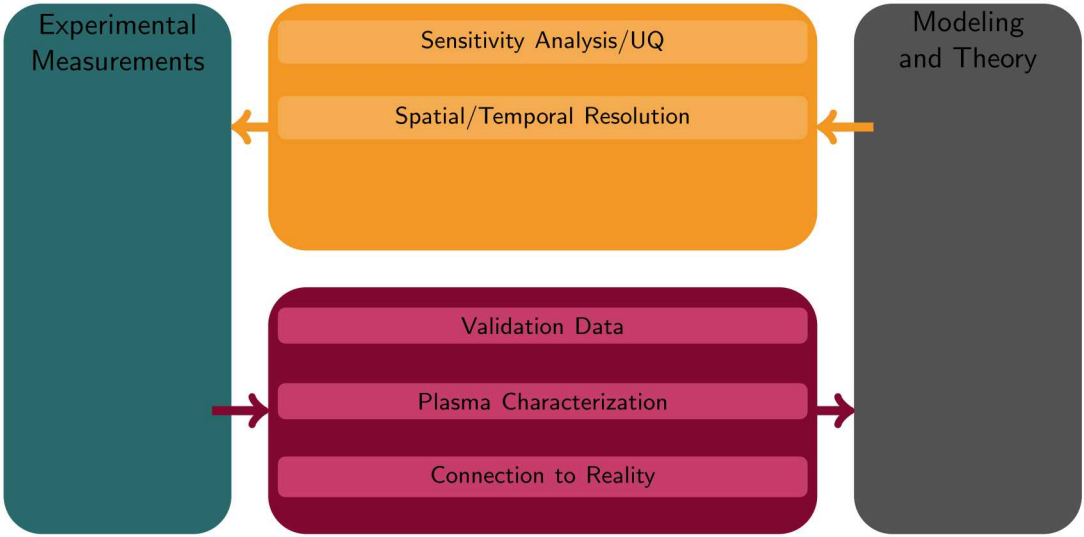

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