

Theory+MBE+ARPES to navigate correlated materials A new Modality of Materials Discovery

How are materials discovered?

Theorists can guide the creation of artificial quantum materials as long as “conventional” building blocks are used. Once strong interactions between the building blocks play a role, new parameters are required to successfully predict the materials’ properties.

PARADIM’s in-house research team is exploiting the world-leading tools of its Platform to provide a new modality of materials discovery for artificial quantum materials. This occurs through the unique combination of thin film growth with *in-situ* spectroscopy enabling scientists to directly see the impact of changes in structure on how the electrons move in these materials. Although calculating this behavior directly for this class of materials is beyond current theories, the resulting behavior can be fit by theory and used to more accurately guide materials discovery.

Closing the materials-by-design loop has enabled PARADIM scientists to predict and demonstrate the behavior of the superconductor Sr_2RuO_4 under strain.

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