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## Energy Colloquium
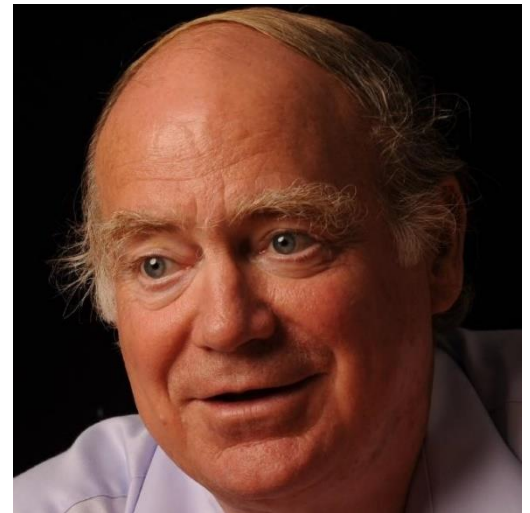
# Analog and Digital Simulation of Microgrid Dynamics

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**Skolkovo Innovation Center**

**Technopark, Building 3, Room 407**

**ABSTRACT:**

Because microgrids are small power systems, sometimes with relatively large components, they may have interesting dynamics. In this context, 'interesting' means non-obvious and sometimes difficult to understand. An example is a microgrid system fed by inverter based generation but with substantial rotating machine loads. In such a system, an islanding event caused by a fault at or near the point of common coupling can cause rapid changes in shaft speed and difficulty in recovering stable operation, even if available power of the inverter based generation would otherwise be sufficient for stable continuing operation.

This sort of situation can be investigated using the small scale analog microgrid emulator that has been built up at MIT, or using conventional simulation techniques implemented with programs such as MATLAB or Simulink. In this colloquium I will discuss the microgrid emulator, the induction motor problem, and a couple of perhaps novel ways of handling the resulting transients.

**Non-Skoltech attendees should request access to the building in advance by sending their passport details to *energy.colloquium@skoltech.ru***

**Colloquium schedule and information on how to get to the colloquium can be found at *http://www.skoltech.ru/research/en/events/energy-colloquium/***