Dual-band IR thermography for NSTX-U
(J-W. Ahn, R. Maingi, T.K. Gray)

- NSTX-U will operate in very high heat flux environment ($I_p \leq 2$MA and $P_{NBI} \leq 12$MW) virtually everywhere, with lithium

- Lithium poses emissivity problem for T_{surf} measurement
  - Needs dual band IR measurement

- Asymmetric heat deposition often occurs (ELM, 3-D fields application, disruption, etc, possibly in snowflake configuration too?). Increasing evidence that the asymmetric heat deposition is more common in other conventionally normal situations caused by error fields, MHD modes, etc
  - Need to cover as much PFC area as possible

- Transient heat deposition has to be properly measured
  - Fast framing rate (≥ kHz) is necessary

- Two wide angle fast IR cameras for lower div. with dual-band adaptor each
- Fast IR camera for upper div. with dual-band adaptor
- Center stack and RF antenna coverage with dual-band adaptor

- Synergy in combination with other proposed div. heat flux diagnostics (Fast TC, real time surface emissivity measurement, etc)