CRESST experiment:
- CRESST is a direct dark matter detection experiment.
- The setup is located at LNGS.
- It uses cryogenic calorimeters at ~10 mK.
- Uses TES for light and phonon signal detection.

A good TES should have:
- Featureless transition
- $T_c$ ~ 15 mK
- $\Delta T_c$ ~ 1 mK

Why sputtering with Xe not Ar?
- We propose using xenon as sputtering gas for producing W-TES
- TES sputtered with Ar were not suitable.
- Some film properties can shift the transition temperature:
  - Phase ($\alpha$-W $T_c$ ~15 mK, $\beta$-W $T_c$ ~4 K)
  - Impurities (e.g. ferromagnetic)
  - Stress
  - Ar retention

Fabrication process:
- Substrates are Si with ~30 nm SiO$_2$.
- 200 nm W layer was deposited in a commercial device at IPP

Comparison of two TES on the same substrate:
- The transition shape is very similar
- Measured $T_c$ ~16 mK
- $\Delta T_c$ ~ 0.4 mK

Tuning of $T_c$ by pressure:
- A few runs to study the effect of pressure on $T_c$.
- A correlation of $T_c$ with pressure can be seen.

Summary & outlook:
- Sputtering W films for TES fabrication with xenon gas showed that TES with $T_c$ down to 15 mK with transition width smaller than 1 mK is achievable.
- Tuning of $T_c$ may be possible.
- So far the films were grown on Si substrates however the next step is to study deposited W films on different substrates.
- Another production campaign at IPP is planned to study the reproducibility.