In the PANDA experiment, micro vertex detectors (MVD) are being developed with high spatial resolution and good momentum measurement for pions from D* decays. The detectors are designed to be triggerless, with double-sided silicon strips for improved particle identification. The MVD design includes hybrid pixel detectors and thin epitaxial silicon sensors for good spatial resolution, especially in the z-direction. The detectors are being prototyped in 130nm CMOS technology and tested under various conditions to ensure their suitability for the experiment.

- **Micro Vertex Detector**: 4 barrels with two inner layers and two outer layers of double-sided silicon strip detectors and 6 forward disks.
- **Detectors Characteristics**:
  - Thickness: 300 μm
  - Strip sensor shape: rectangular for the barrel, trapezoidal for the disk
  - Readout pitch: 70 μm for the barrel, 130 μm for the disk
- **Performance**:
  - 15 GeV incident p-p collisions
  - Vertex resolution: \( \sigma_x = 70 \mu m \)
  - Secondary vertex resolution: \( \sigma_x = 35 \mu m \), \( \sigma_y = 100 \mu m \)
  - Energy loss information
- **Prototypes**:
  - ToPix specifications: 100 x 100 μm, 11.4 x 11.6 mm
  - Chip active area: 110 x 110 mm
  - Timing measurement: T = 12 bits, 12 bit dynamic range
  - Clock frequency: 150 MHz
- **Material Budget Studies**:
  - Silicon budget: \( \leq 0.5 \) MeV per module
  - Cooling test results:
    - HTC foam: 15 cm
    - Cooling capillary: 4 mm
  - Thickness: 0.9 g/cm³
- **Particle Distribution**:
  - Forward direction (light target)
  - Total emission

The MVD design is in progress with parallel software development to check physics performance. The prototyping phase is started, but still some challenging tasks have to be studied and optimized.