# Exercise 2

Inversion of profiles from dark-cored penumbral filament.

• Hinode/SO observations with SNR~1000, no telluric lines, 2 lines Fe I 630.1 & 630.2 nm. Strong, symmetric signals.

1. What kind of model would you use to invert them?
2. Can the fit be improved with more nodes in T? (use 2 cycles!)
3. What happens with 2 nodes in B and $v_{LOS}$?
4. What happens with 10 nodes in B and $v_{LOS}$?

• Invert profiles from (3.), starting from initial guess model with flat stratifications of B, $v_{LOS}$, and inclination (modify hsra.mod)

    1. One node in B, $v_{LOS}$, inclination.
    2. Two nodes in B, $v_{LOS}$, inclination.

If no instrumental PSF is available, use macroturbulence to mimic its effect (i.e, invert $v_{mac}$)

Use more weight for Q, U and V to force better fits to those parameters