1 Questions for professor Sundqvist

- What are the equations governing the processes in `pcyg.f90`
- What does this mean? `xnew=xstart+(v-sign(0.06,xmueou))*xmueou-v*xmuein`
- Pcygni profiles: Why don't we just take the absorption and the emission and add them together.

2 Questions for professor Samaey

Important

- In [**Dimarco2018**], Equation (31) why does it correspond to diffusion (more specifically the second term on the right hand side).
- MC voor radiative transfer problem in [**Dimarco2018**]
- taal van masterproef
- geen vergelijlijking van het probleem (zie e-mail)

Not important

- what is the difference between Monte Carlo and equation-free computing?

3 Questions for Dylan

- what happens @ limb darkening: why is $J(\tau)$ apparently constant from the numerical results? Section **??**.

Thank you very much ! :)

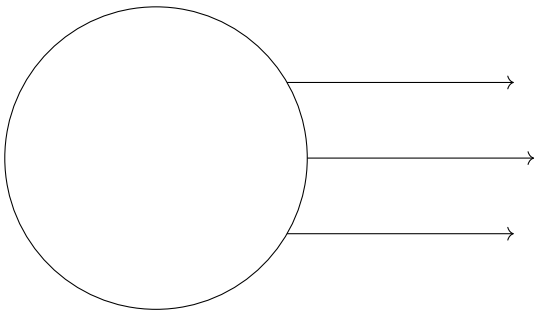
4 Questions for Luka

- question about derivation concerning $\frac{dL}{dr}$ in Section **??**. Could you please quickly check out the derivation in **??**. The scaling factors are not such important for me at this moment, what bothers me primarily is the scaling relation between $\frac{dL}{dr}$ and r in Equation **??**.

Thank you very much ! :)

5 Solved questions

- Sundqvist+ 2009: what is thermal velocity (see Wikipedia)
- Sundqvist+ 2009: what is line force (see explanation Dylan)
- unclassified: what is a flux limiter? (see course notes)
- unclassified: what is cross section of scattering (see Wikipedia)
- Puls manual: p.26: how does the Milne equation appear? (see library book)
- pcyg.f90: what are p-rays? (see anwser professor Sundqvist)
  - parallel rays leaving the atmosphere (of, e.g. a star)



- pcyg.f90: what is meant by Eddington limb-darkening? (see answer professor Sundqvist)
  - standard limb darkening
- Sundqvist+ 2009: what is the geometry of a *slice*?
- CMFAA course notes p.13 (the example) what is understood by plane-parallel geometry and is it 1D or 2D? (see answer professor Sundqvist)
  -
- CMFAA course notes p.15: why is this called diffusion $F = T^3 \dfrac{dT}{dx}$ (flux proportional to local gradient in temperature)?
- unclassified: what is the terminal velocity v_∞?
- unclassified: what is Sobo-distribution? (Sobolev distribution)
- pcyg.f90: for `test_number` = 2, why do we call it isotropic since isotropy of `mu` does not imply isotropy of `theta`? (myself, see definition of intensity)
- (for which star are the exerpimental data and what assumptions are used in the theory?) (see ... and derive some formulas)
- book *Stellar Atmospheres* [Mihalas] (bought)
- ordening of array `freq` (adapted the code, experimented with it)
  - why `freq(1) = xmax-5*deltax`?
  - frequency binning: how are you sure that no lower/higher frequencies can occur?

    derive this analytically
- `Pcyg.f90` does it take into account that photons are scattered away from the observer? (via assumption of radial symmetry)
- what is the meaning of I_ν versus I? ($I = \int I_\nu d\nu$)

6 Interesting problems

- inverse radiative transfer problem

might be interesting for looking at

- splitting methods
- Eddington factors

7 Do not forget

- convergence plots