

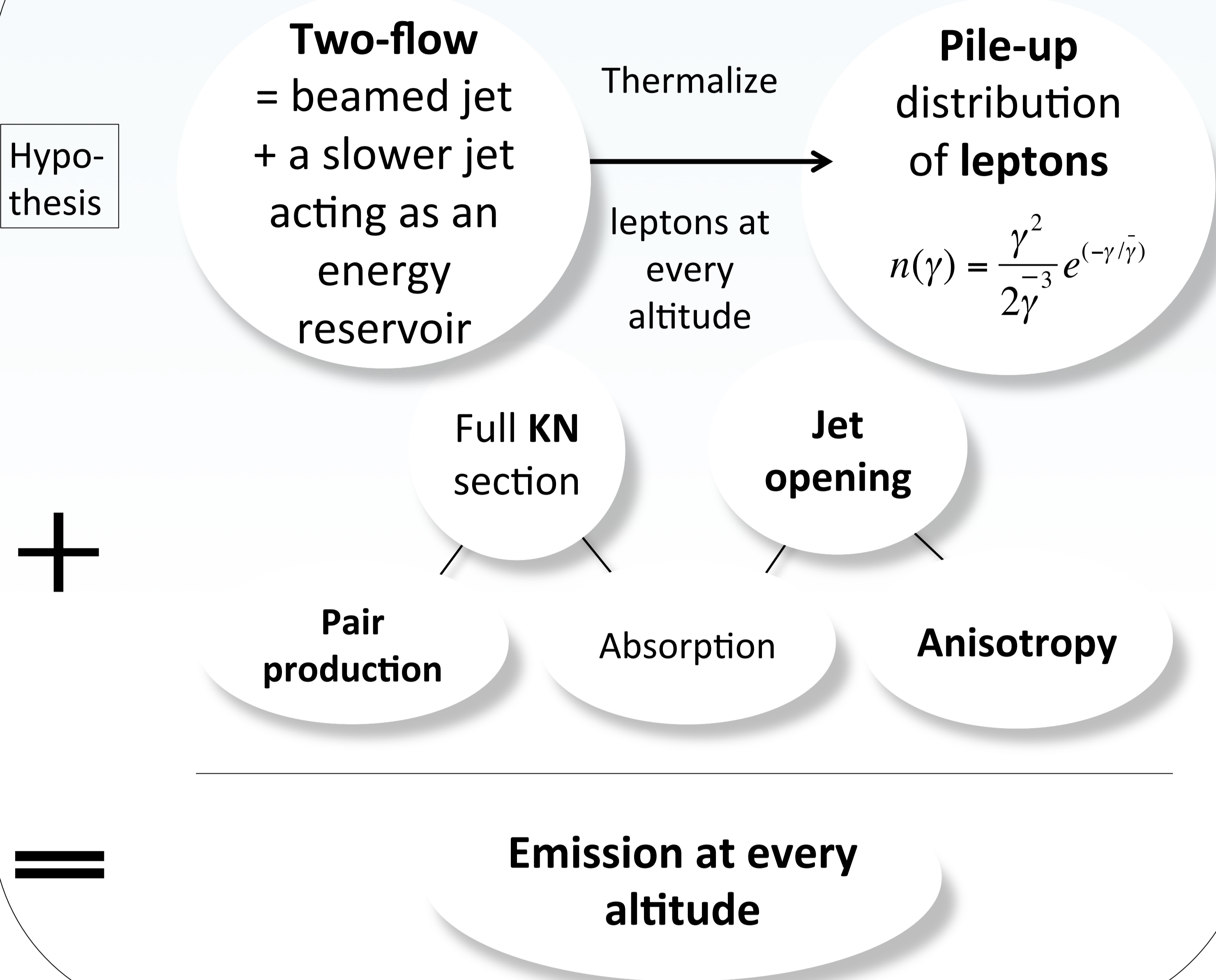
Multi-zone modeling and anisotropic emission of AGN's jets



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The Model



Computation & results

From an initial condition at the base of the jet, the physical conditions are consistently computed at every altitude of the jet. One can then integrate the emission along the jet for Synchrotron, Synchrotron Self Compton (SSC) and External Compton (EC).

One can observe:

- **Evolution of physical conditions in the jet** (cf figure 2.)
 - Different zones of the jet show different emissions
- Combination of these zones (with pile-up distributions)
 - **power-law spectra**
- The diminution of power of 6 order of magnitude between a pole-on and an edge-on observation due to the beaming of the jet
- The shift of the energy peak due to doppler effects
- $P_{EC} > P_{SSC}$ at $i_{obs} = 0$ BUT $P_{EC} < P_{SSC}$ at greater angles:
 - At greater angles, leptons emitting in the observer direction perceive less blueshifted photons from the disk than leptons travelling along the jet axis
 - **Greater influence and then domination of the SSC emission at greater angles**

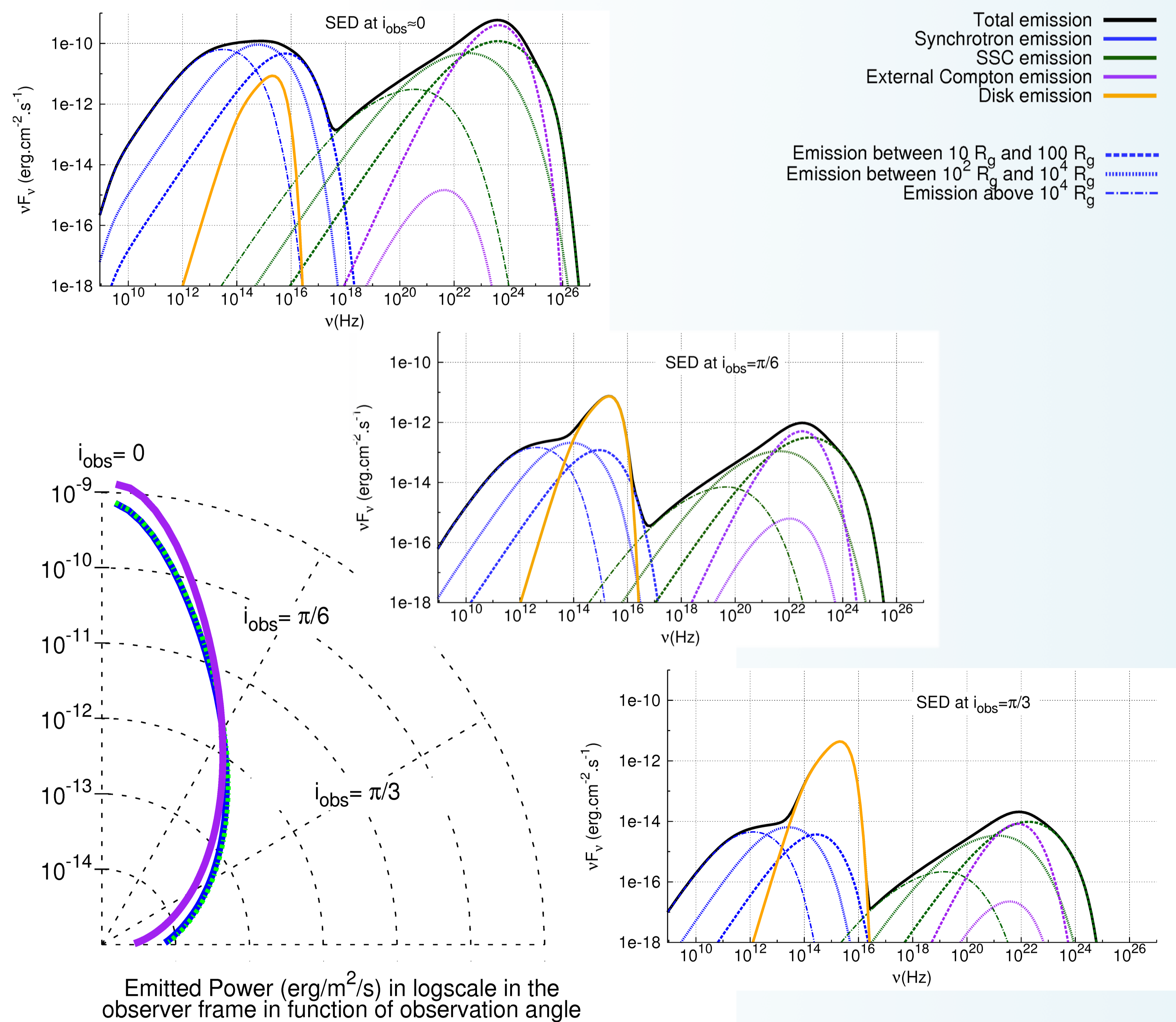
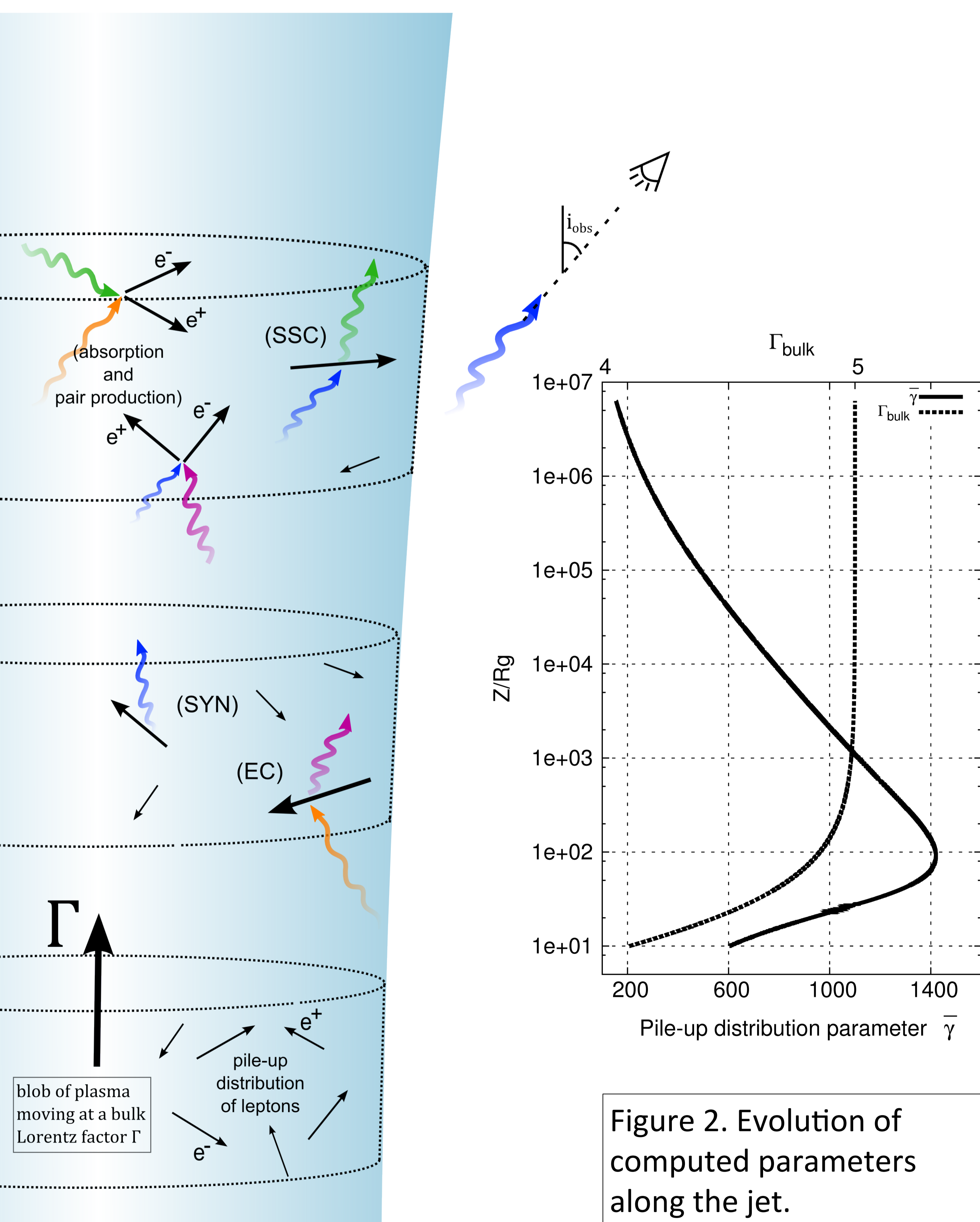


Figure 1. Integrated power and spectra along the jet for different observation angles

Conclusion: Anisotropy leads to some tricky effects in the emission and the same object will look very different if seen at different angles. A multi-zone model is essential to take into account such effects and will lead to a better understanding of AGN's jet emission. Some work to fit multiwavelength data is currently in progress.

References:

[1]: Sol H., Pelletier G. & Asseo E., Two-flow model for extragalactical radio jets, MNRAS, 1989.

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