Radio-Quiet AGN

Bartolomeu J. Ubisse

Eduardo Mondlane University - Mozambque

AVN Training HartRAO
26/04/2018

Outline

Definition of Radio-quiet AGN

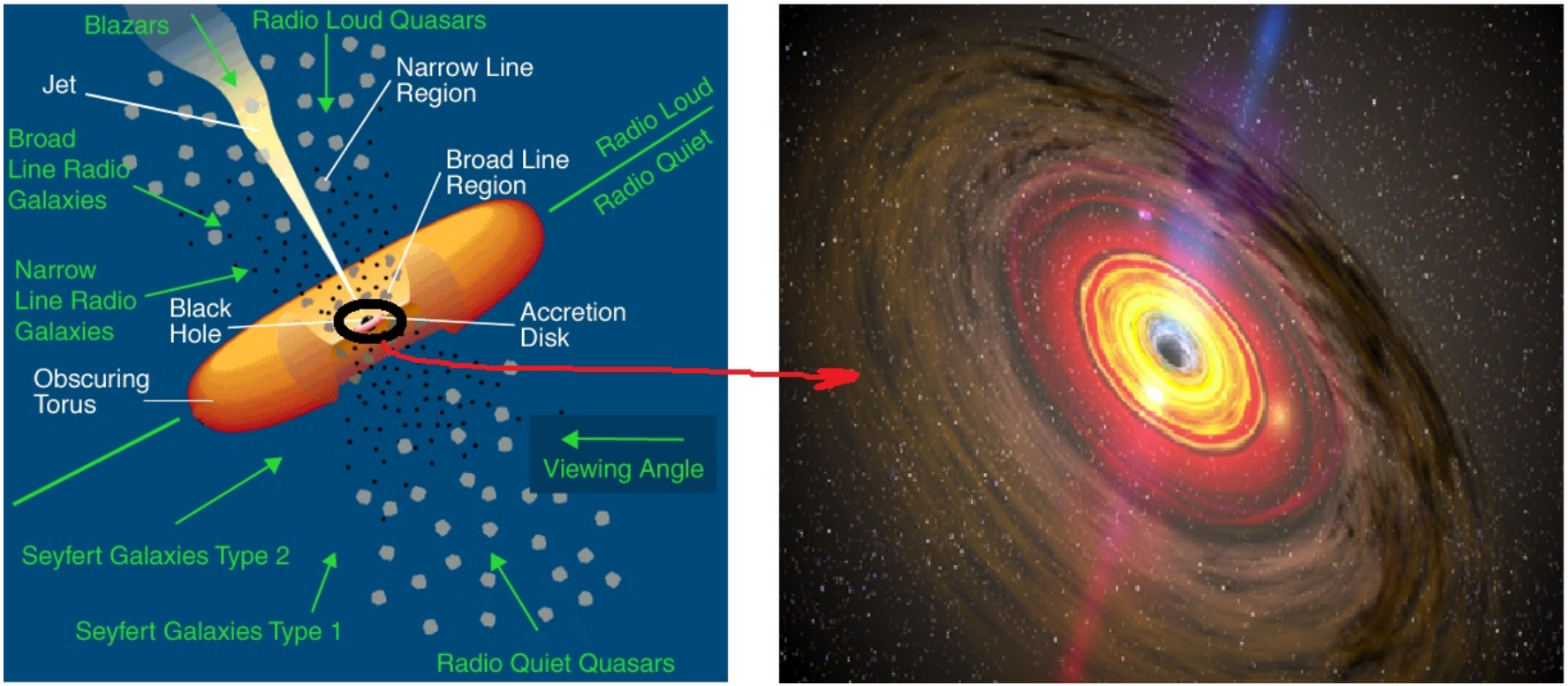


Figure 1: Model of AGN and the animation of accretion disc.

Definition of Radio-quiet AGN - Cont.

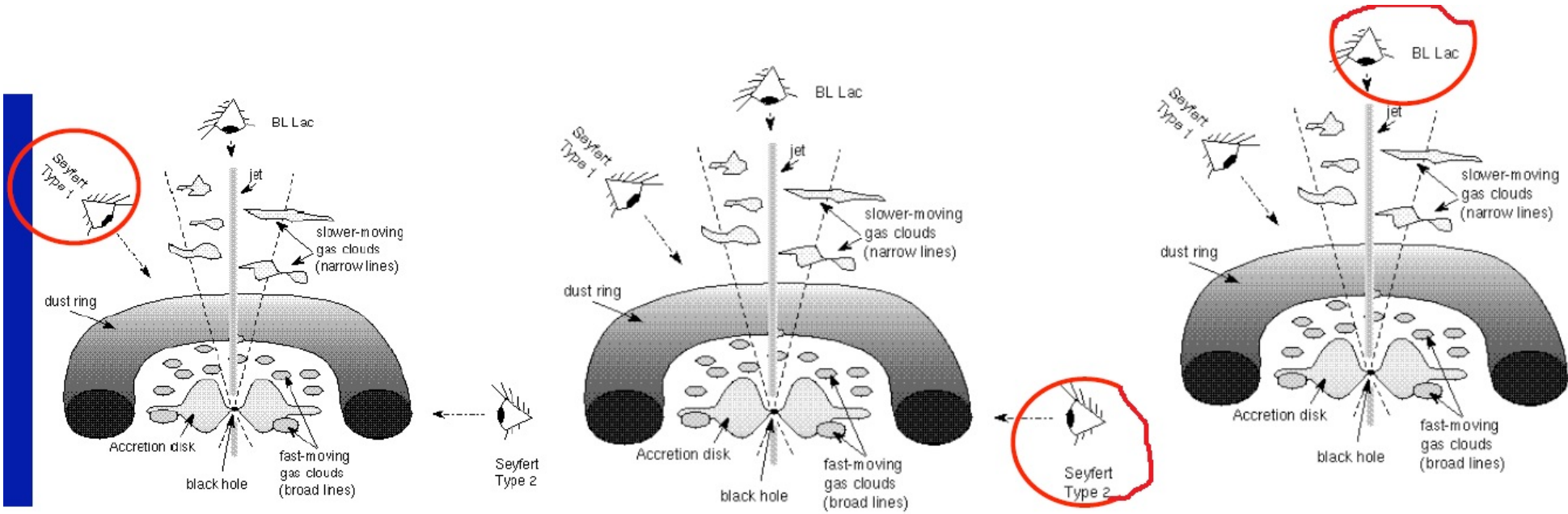
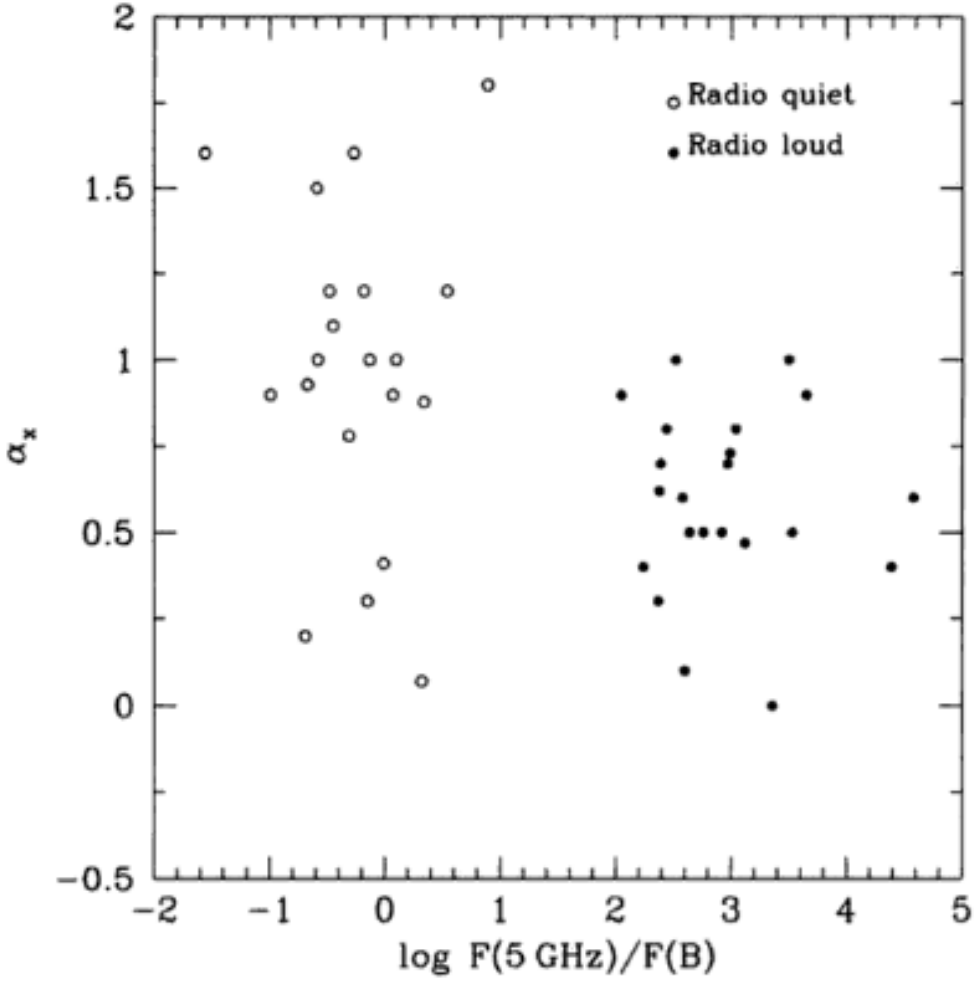


Figure 2: different lines of viewing AGN

- Through obscuring AGN $\Longrightarrow$ **broad lines** emitted by hot fast moving gas around the BH.
- Through a dust torus $\Longrightarrow$ **narrow lines** emitted by slower moving clouds farther from the BH.

Definition of Radio-quiet AGN - Cont.



$$R = 1.36 \times 10^5 \times \frac{L(5\,GHz)}{L(4400\,\mathring{A})} \quad (1)$$

Figure 3: Spectral index VS Radio loudness [Labiano ,2006]

Definition of Radio-quiet AGN - Cont.

Radio-quiet AGN $\Longrightarrow$ are those with a lack of emitted relativistic jets and with radio loudness lower than ten ($R < 10$).

Classification of Radio-quiet AGN

1. Seyfert-I;
2. Seyfert-II;
3. Quasars and
4. Liners.

Classification of Radio-quiet AGN - Cont.

Seyfert galaxies have **bright compact cores** which spit out lots of strong **infrared emission**.

- Type-I $\Longrightarrow$ faster-moving hot gas $\longrightarrow$ broad emission lines (strong continuum emission).
- Type-II $\Longrightarrow$ slower moving clouds $\longrightarrow$ narrow emission lines (very weak continuum emission).

Classification of Radio-quiet AGN - Cont.

Figure 4: Seyfert-I: NGC 1068 [https://en.wikipedia.org/wiki/Seyfert-galaxy]

Figure 5: Seyfert-II: NGC 7742 [https://www.spaceanswers.com/deep-space/what-is-a-seyfert-galaxy/]

- Quasars $\longrightarrow$ are more luminous versions of Seyfert-I $\longrightarrow$ always show **strong optical and X-ray continuum emissions** $\longrightarrow$ **broad and narrow optical emission lines**. The host galaxies of quasars can be **spirals, irregulars or ellipticals.**

Figure 6: Quasar
[https://www.nasa.gov/mission-pages/webb/news/dusty-quasar.html]

Final Considerations

The Studies of the physical processes that take place in the nuclear region of radio-quiet AGN continue to be a principal role of Scientists as, once all those processes are well understood, not only will be a great leap in most of the matter related to the **high energy particle accelerators** but also useful information related to the possible link between **AGN and the star formation** will be known.

The End!

Khanimambo!

Thank you!