”Per aspera ad astra...”

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Introduction to the stars in high energy

Let your imagination soar. By sitting on the old rocker looking at the sky with couple of good old whiskey you can easily start thinking about the universe. You are looking at heck of a different kinds of cosmic objects, but suddenly you see almost only the stars. Almost all the shiny dots on the sky are stars and these stars are only the closest ones from our Galaxy. Yes, you can see few other galaxies by naked eye, but none of the exotic cosmic objects you are imaging about. They are too faint to be observed easily, because they are far, far away.

Think about distances in the universe. One of the most accurate explanation is that from: Adams (1979) *"Space," it says, "is big. Really big. You just won't believe how vastly, hugely, mindbogglingly big it is. I mean, you may think it's a long way down the road to the chemist's, but that's just peanuts to space..."*

Consider this, sometimes you want to study processes in these extreme, very faint objects, but they are too faint, too far in the universe. You are looking for "laboratory" which similar processes, but closer. The X-ray binary stars are this kind of laboratories. In this work are several types of such binaries disused, but closer look is taken to intermediate polars.

1.1 Motivation

We easily find many reasons why to study stars in high energy bands. We can consider the direct and the most common scientific applications like observations of the supernovae, black holes & neutron stars in X-ray binaries. But for education purposes I am preferring several others, very nice examples closer to topic of this work.

- **Relativistic jet phenomena**: like it is proposed Mirabel (2002) that univer-

sal mechanism should be at work in all the relativistic jet sources in the universe. Better understanding of sources as: microblazars, AGNs and gamma-ray burst will help to gain more comprehensive understanding of this phenomena. Microblazars are playing role of very close “space laboratories”.

- **White dwarfs masses in IP**:
- **GXRE**:

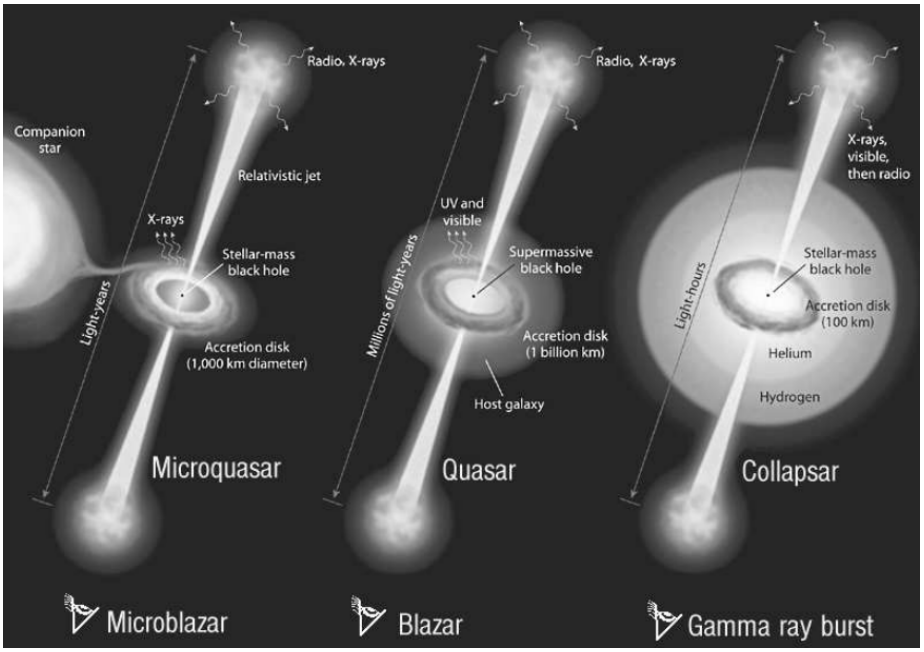

Figure 1.1: NOT in scale diagram, showing curent ideas of micro-quasars, AGNs and gamma-ray bursts. Mirabel (2002) as ...

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Bibliography

Adams, D. 1979, The Hitchhiker's Guide to the Galaxy (Great publishing house of Ursa Minor Beta)

Brunschweiger, J., Greiner, J., Ajello, M., & Osborne, J. 2009, A&A, 496, 121

Frank, J., King, A., & Raine, D. 2002, Accreation Power in Astrophysics Third Edition (University Press, Cambridge)

Mirabel, I. F. 2002, ASP Conference Series

Revnivtsev, M., Sazonov, S., Krivonos, R., Ritter, H., & Sunyaev, R. 2008, A&A, 489, 1121

Rybicki, G. B. & Lightman, A. P. 1979, Radiative Processes in Astrophysics (John Wiley & Sons, Inc.)

Sazonov, S., Revnivtsev, M., Gilfanov, M., Churazov, E., & Sunyaev, R. 2006, A&A, 450, 117

Suleimanov, V., Revnivtsev, M., & Ritter, H. 2005, A&A, 435, 191

Warner, B. 1995, Cataclysmic Variable Stars (University Press, Cambridge)

Yuasa, T., Nakazawa, K., Makishima, K., Saitou, K., Ishida, M., Ebisawa, K., Mori, H., & Yamada, S. 2010, A&A, 520, A25+

Appendix

this will be the appendix

Table 1: Estimated WD masses from previous reports ...

System	Suzaku XIS+HXD M_{WD}	Swift BAT M_{WD}	RXTE PCA+HEXTE M_{WD}	RXTE PCA M_{WD}	Ginga LAC M_{WD}	ASCA SIS M_{WD}	This work XMM & Integral M_{WD}
FO Aqr							
XY Ari							
MU Cam							
BG CMi							
V709 Cas							
TV Col							
TX Col							
YY Dra							
PQ Gem							
EX Hya							
NY Lup							
V2400 Oph							
AO Psc							
V1223 Sgr							
RX J2133							
IGR J17303							