Observational aspects of Herbig Ae/Be stars and of candidate young A/B stars

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PART A

Herbig Ae/Be stars

The class of Herbig Ae/Be stars (HAeBes) is historically determined to consists of pre-main sequence objects of spectral type Ae and Be. A complete review of the observational properties of HAeBes is given in Chapter A1 by discussing original definitions of this stellar class and definitions based on new results. Founded on these views, existing literature has been ploughed through to make an up-to-date catalogue of HAeBes and HAeBe candidates. The resulting lists are presented in Chapter A1.

As an example of the selection of HAeBes from candidate stars, the observational properties of three of such candidates are discussed in Chapter A2. The three objects are in particular interesting as they are relatively bright with respect to other HAeBes candidates.

An advantage of bright HAeBes is that high resolution spectroscopy can be obtained. For two well know HAeBe objects, with a favourable oriented disk, a high resolution spectroscopy monitoring programme is presented in Chapters A3 and A4. In Chapter A3 first results are presented that indicate that the disk material of UX Ori is accreting in the form of comet-like bodies. Such pioneering results are also found for BF Ori. Due to a more intensive monitoring programme for BF Ori, more details of the comet-like bodies are presented in Chapter A4.

As discussed in Chapter A1, the IR-excess is one of the fundamental discriminators for the selection of HAeBe candidates. Such an IR-excess can be one of the main indications of the existence of a (proto-planetary) disk around young objects. A good understanding of the origin of the IR-excess of HAeBe candidates is necessary to study the disk material that ultimately could produce (proto-)planetary systems. In Chapter A5 a study is presented that discusses the amount of IR-excess of HAeBe candidates. Besides ideas about the probable origin that produces the IR-excess, the results can also be used to select objects that differ in disk properties for further observations and for probing the (proto-planetary) disk material.