A paper I am writing now …

A POSSIBLE DETECTION OF OCCULTATION BY A PROTO-PLANETARY CLUMP IN GM CEPHEI

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ABSTRACT

GM Cep in the young (~ 4 Myr) open cluster Trumpler 37 has been known to be an abrupt variable and to have a circumstellar disk with very active accretion. Our monitoring observations in 2009–2011 revealed the star to show sporadic flare events, each with amplitude $\lesssim 1$ mag lasting for about 10 days. These brightening events were associated with a bluing color, and could be accounted for by increased accretion activity. Moreover, the star also underwent a brightness ditch of $R \sim 1$ mag lasting for about a month, during which the star became bluer. This ditch seems to have a recurrence time scale of a year, as evidenced in our data and the photometric behavior of GM Cep over a century long. Between consecutive ditch events, the star experienced a gradual brightening and fading of an amplitude of 1 mag, during which the star became blue at peak luminosity. It is hypothesized that the ditch is caused by obscuration by an orbiting concentration of circumstellar dust. GM Cep therefore exhibits both the EX Lupi type and UX Orionis type activity, and appears to have undergone the inhomogeneity process in transition between grain coagulation and planetesimal formation in a young circumstellar disk.

Subject headings: Occultations — Planets and satellites: formation — Protoplanetary disks — Stars: Individual: GM Cep — Stars: pre-main sequence — Stars: variables: T Tauri, Herbig Ae/Be

Abstract --- the heart of your paper

◆What does a reader expect to see in an abstract?

◆What do you expect to see as a reader?

Four parts of an abstract

- **What**
  - What is the problem? What is the topic of this paper?
- **How**
  - How is the problem solved (methodology)?
- **Results**
  - What are the specific results? How well is the problem solved? Visuals in abstracts?
- **Impact**
  - So what? How useful is this to science or to the reader?

Very often, the fourth part (impact) is missing, because

- The maximum number of words allowed by the journal ran out too quickly with a long rambling start.

- The author (mistakenly) considered that the results should speak for themselves.

- The author was not able to assess the impact of the scientific contribution.

    "a result of the myopia caused by the atomization of research tasks among many researchers"
    見樹不見林

- The parts with the largest number of words = contribution

- Adjectives ok in the title, but precision in the abstract

- Coherence between abstract and title

- 30%~80% (i.e., > 1/3) significant title words are in the first sentence of the abstract. There are exceptions, but usually at least there should be one word from the title. Otherwise, sentences 2 and 3 mention most of the other title words.

- The first sentence should expand, not just repeat, the title.

- All title words should be in the abstract. Otherwise, why does a word deserve a "title" status of your paper? One exception is using an alternative, interchangeable keyword in the field → to increase the chance of being found by search engines.

- If a title word is not important, remove it.

- If a title word is missing in the abstract and is important, put it in.

- If the abstract contains a keyword that should be in the title, rewrite the title to incorporate that keyword.

- The abstract needs to set the problem, but does not need to justify why it is important (the introduction does that.) The abstract, however, needs to justify the significance of the results.

- The abstract should **NOT** (1) mention the work of other researchers (it is done in the introduction), unless the paper is an extension of a previous paper; (2) why the problem is important (also the role of the introduction). The abstract should concentrate on the importance of the results

- Use the present tense in the abstract is ok. Once the tense is chosen, keep it throughout the abstract.

- Use the past tense in the conclusion.

- The abstract should be stand-alone. It needs nothing else. It sets expectations for the reader.

- It should not be longer than necessary.

- It should tie to the title.