

## Annotation Guidelines

You will be annotating argumentative moves in a set of abstracts of research articles in physics. Please read the whole guidelines before doing any annotation, and follow the annotation instructions carefully!

### 1. Introduction

You are going to get texts of abstracts split into sentences. Your task will be to tag each of these sentences with one of the categories listed and explained in Section 2 (Background, Problem, Method, Results, Conclusions and their sub-types). Please read the definitions and examples provided. Do not hesitate to ask if something remains unclear!

Physics may be not your domain of expertise, but this task does not require complete or in-depth understanding of domain-specific contents. Annotation shall be based on the main communicative aim of the writer, so the important thing is always to ask oneself «What did the author want to say with this sentence?» For example, did (s)he want to communicate the aim of the study? Or did (s)he want to describe the methods applied?

Asking these questions will allow avoiding confusion of the main communicative aim vs. mentioning. For example, in a sentence starting with «Our goal is a stable method for....» the main communicative aim is to inform the reader of the aim of the study, and a method is just mentioned, this mention being subordinated to the main communicative aim.

Using this procedure shall in most cases allow finding one appropriate category for each sentence. Assigning multiple categories to one sentence is allowed when the annotator is confident that there are several communicative aims of equal importance in a specific sentence.

If you think that none of the listed categories is appropriate, you can assign the “Unknown” tag.

For making your decision on the category to be assigned to each sentence it is mandatory to use the Decision Tree in Section 3 below. Even if this procedure may seem tedious after some time it is important to stick to it in all cases! The categories may look clear and self-explanatory to you, but previous experiments have shown that a wide range of subjective interpretations of these categories is possible, especially for the fine-grained distinctions within one general category. Testing each sentence against the questions in the Decision Tree can limit this variability of interpretations.

## 2. Categories, Definitions and Examples

### Background

Sentences describing some common-ground knowledge, state-of-the-art, history, circumstances pertaining to the current work. No claim is made, it is a statement of facts.

Main communicative aim: introducing topic, setting the scene

Example:

*Butadiene (BD) metabolism shows gender, species and concentration dependency.*

### Problem

Sentences portraying the research goal of the article or describing an existing research gap.

Main communicative aim: statement of the problem addressed in the current paper

Example:

*Our aim is to develop an LC-MS/MS method for simultaneous detection of all three BD hemoglobin adducts.*

Potential confusion:

with Background: Sentences describing a lack of solution in the field, drawbacks of existing solutions, etc. belong to the Problem category, as they are the motivation for the reported research. Though they are also part of scene-setting, they shall not be interpreted as Background:

*However, the insufficiently high value of the temperature of these compounds is a barrier to their widespread use. (correct category: Problem)*

### Method

A general category for instances of methods used, can be resorted to if no decision can be made on a more specific level. Otherwise **shall not** be used, one of the specific categories below shall be assigned instead:

#### Method-Specific

Specific methods used.

Main communicative aim: conveying information about a specific method used

Example:

*Standards were characterized and quantified by LC-MS/MS and LC-UV.*

#### Method – Procedure

A way of doing research according to a defined and regular plan; an approach or procedure used for investigation.

Main communicative aim: describe the way the research proceeded

Example:

*The method was validated with different amounts of human HB-Val standard.*

Potential confusion:

with Problem: for studies aiming at the development of a new method (or modification of an existing method) statement of this aim shall not be additionally tagged with the Method category, though it may contain a mention of a specific method:

*In this paper, we develop a method of modified hyper-Ramsey spectroscopy in optical clocks*  
(correct category *Problem*)

The LHC ratio method is applied to well-understood 200 GeV spectrum data (correct category *Method-Specific*)

## **Results**

A general category for instances of measurable/objective outcomes of own work, can be resorted to if no decision can be made on a more specific level. Otherwise **shall not** be used, one of the specific categories below shall be assigned instead:

### **Results – Specific**

Specific measurable/objective outcomes of an experiment; quantities, formulae, etc., obtained by calculations, specific properties of the entities involved and conditions under which they hold.

Main communicative aim: to report specific results

Example:

*The amounts of HB-Val present were 268.2+/-56 and 350+/-70 pmol/g (mean+/-S.D.) for males and females, respectively.*

### **Results – Reference**

A high-level overview / summary of results to be presented in the paper or further on in the abstract

Main communicative aim: to refer the reader to the results contained in the paper or in the abstract

Example:

*The main instability mechanisms are identified.*

Potential confusion:

with Method: if the goal of the paper is to develop a new method, then this method (and its properties) is a Result:

*The origins, advantages and shortcomings of the method are described and discussed.*  
(correct category *Results-Reference*)

## Conclusions

A general category for instances of findings and non-measurable conclusions of own work, can be resorted to if no decision can be made on a more specific level. Otherwise **shall not** be used, one of the specific categories below shall be assigned instead:

### Conclusions - Explanation

Author's hypothesis/ speculation concerning why the results are the way they are, one of the possible explanations for the obtained results

Main communicative aim: to explain the results

Example:

*The difference may be due to higher specificity of the LC-MS/MS method to the N-terminal peptide.*

### Conclusions - Specific

A specific, fully formulated judgment or statement arrived at by any reasoning process, implications of the obtained results

Main communicative aim: to present specific conclusions

Example:

*Therefore this effect should be accounted for when investigating prestellar cores in massive star forming regions.*

### Conclusion - Reference

Statement of a subject of final discussion, indication of what conclusions are about/what they are concerned with.

Main communicative aim: to refer the reader to the conclusions contained in the paper

Example:

*We argue that this system is prone to a topological phase separation.*

Potential confusion:

with Results: the critical question to ask is "Has this statement required additional reasoning (induction, deduction, etc.)?" For instance, comparisons only require processing of objective parameters and shall be tagged as Results, even when no specific numbers are given:

*These results give better quantitative agreement with experimental data for band gap sizes.*  
(Correct category: Results-Reference)

*This means that the phenomenon can be used for investigation of the electron spectra of ballistic nanostructures.* (Correct category: Conclusions-Specific)

### Unknown

None of the above categories could be assigned.

### 3. Decision Tree

1. Does the sentence describe general background, state-of-the-art in the domain? Does it set the scene for the reported research? Is it a plain statement of facts?  
  
Yes – *Background*  
  
No – go to Question 2
2. Does this sentence specify the research aim?  
  
Yes – Problem  
  
No – go to Question 3
3. Does it report a research gap, a lack of solution or drawbacks of existing solutions in the field that motivated the reported research?  
  
Yes – Problem  
  
No – go to Question 4
4. Is the main aim of this sentence to inform the reader of the methods and procedures used?  
  
Yes – go to Question 5  
  
No – go to Question 7
5. Is a specific method mentioned?  
  
Yes – Method-Specific  
  
No – go to Question 6
6. Is a description of a research procedure given?  
  
Yes – Method – Procedure  
  
No – Method
7. Does this sentence report obtained objective results of the study?  
  
Yes – go to Question 8  
  
No – go to Question 11
8. Does this sentence contain specific results (numerical, observed, etc.), specific conditions under which they hold, specific properties of the entities involved?  
  
Yes – Results-Specific  
  
No – go to Question 9
9. Is this sentence an elaboration of previous more general statements? Does it contain or can one add to it without a change in meaning such discourse markers as *in particular*, *specifically*, *first*?  
  
Yes – Results-Specific  
  
No – go to Question 10

10. Does the sentence present a high-level overview / summary of results to be presented in the paper or further on in the abstract? Is hedging used (modal verbs, indefinite quantifies, etc.)?

Yes – Results-Reference

No - Results

11. Is the main aim of this sentence to communicate the conclusions, i.e. judgments or statements arrived at by any reasoning process based on the obtained results?

Yes – go to Question 12

No - Unknown

12. Is this sentence an attempt to explain the obtained results (key words: *explain, mean, imply, can be attributed to...*)?

Yes – Conclusions – Explanation

No – go to Question 13

13. Does this sentence contain fully formulated conclusions?

Yes – Conclusions-Specific

No – go to Question 14

14. Does the sentence present a high-level overview / summary of conclusions to be presented in the paper or further on in the abstract?

Yes – Conclusions-Reference

No - Conclusions