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John Smith**
Hans Anders 

FULL TITLE
FULL SUBTITLE[§]

Abstract

The abstract should briefly summarize the contents of the paper and **should not contain any references**.
If needed, it can be split into several paragraphs.
The abstract should be followed by a list of keywords. The authors **must provide at least 3 keywords** which should be typed in lowercase (except for proper names) and separated with commas.
The authors can **optionally** provide the *Mathematical Subject Classification* codes by using the `msc` environment which has an **optional argument** indicating the year (the default value is 2010). However, it is **not compulsory**.
Keywords: keyword 1, keyword 2, keyword 3.
2020 Mathematical Subject Classification: code 1, code 2, code 3.

* *Thanks* note by Susan Jones.
** *Thanks* note by John Smith.
§ Title *thanks* note.

18 1. Title part

19 There are three commands in the preamble the authors are requested to
20 use and fill with arguments:

- 21 • `AuthorEmail`
- 22 • `Affiliation`
- 23 • `Title`.

24 1.1. AuthorEmail

25 The `\AuthorEmail` command has the following syntax:

26 `\AuthorEmail[#1]{#2}[#3]{#4}[#5]{#6},`

27 where:

28 **#1** is an optional argument which can contain an author's **ORCID num-**
29 **ber** in the format: dddd-dddd-dddd-dddd (an author is requested to
30 fill this argument should they have an ORCID number),

31 **#2** is a mandatory argument which should contain an author's **full name**,

32 **#3** is an optional argument which can contain an author's name **in an**
33 **abbreviated form** (in case the full name does not fit within the
34 header),

35 **#4** is a mandatory argument which should contain an author's **email ad-**
36 **dress**,

37 **#5** is an optional argument which can contain a thanks footnote text if an
38 author wants to include one,

39 **#6** is a mandatory argument which should contain an integer between 0
40 and 100 that represents **the percentage share of the author in**

41 **preparation of the work**; the sum of the shares of all authors
 42 should be 100.

43 If a paper is multi-authored, then each author should invoke the command
 44 `\AuthorEmail` separately. The order in which authors' names will appear
 45 in the output pdf will reflect the order in which the commands have been
 46 invoked.

47 1.2. Affiliation

48 The `\Affiliation` command has the following syntax:

49 `\Affiliation{#1}{#2}{#3}{#4}{#5},`

50 where:

51 **#1** is a mandatory argument which should contain a **university's / in-**
 52 **stitution's name**,

53 **#2** is a mandatory argument which should contain an **institute's / de-**
 54 **partment's / faculty's name**,

55 **#3** is a mandatory argument which should contain a **work address in**
 56 **the format: postal code, street name and number**,

57 **#4** is a mandatory argument which should contain the **names of a town**
 58 **and country**,

59 **#5** is a mandatory argument which should contain the **indices of authors**
 60 **with this affiliation** (e.g., if a given affiliation is assigned to authors
 61 1 and 3, one should put '1,3' as #5).

62 If there are multiple affiliations occurring in the paper, then each of them
 63 needs to be included in a separate `\Affiliation` command. In such a case
 64 the order in which subsequent `\Affiliation` commands are executed can
 65 be arbitrary¹.

66 If a given argument is not applicable, leave it empty.

¹The reference for the last argument of the `\Affiliation` command is the order in which the `\AuthorEmail` command for the given author was invoked.

67 1.3. Funding, Conflict, Ethics, and UseOfGAI

68 Filling the `\Funding`, `\Conflict`, `\Ethics`, and `\UseofGAI` fields is mandatory.
 69 They should contain:

- 70 • the relevant funding information,
 - 71 • the declaration of any relevant conflicts of interests,
 - 72 • the statement of any relevant ethical considerations, and
 - 73 • the declaration regarding the use of GAI tools in preparing the paper,
- 74 respectively. The Author(s) may leave the default values of the fields as is,
 75 should they find it appropriate.

76 1.4. Title

77 The `\Title` command has the following syntax:

78
$$\text{\Title[\#1]\{ \#2\}[\#3]},$$

79 where:

80 **#1** is an optional argument which can contain the **paper's title in an**
 81 **abbreviated form** if the full title does not fit within the header,

82 **#2** is a mandatory argument which should contain **paper's title in the**
 83 **full form**. If it needs to be broken into multiple lines, one can do
 84 that by inserting the `'\\'` commands in the appropriate places,

85 **#3** is an optional argument which can contain a **footnote text** if the
 86 author wants to attach one to the title.

87 2. Extra packages and commands

88 The authors can define their own commands in the preamble of the docu-
 89 ment. They can also use additional packages, however since the `BSLstyle`

90 class automatically loads certain packages, they are asked not to include
 91 these packages in the preamble as it can lead to compilation errors. The
 92 list of packages pre-loaded by BSLstyle is as follows:

93

• amsmath	• graphicx	• datetime
• amsfonts	• enumitem	• totpages
• amscd	• url	• fancyhdr
• amssymb	• hyperref	• footmisc
• amsthm	• xargs	• setspace
• caption	• titling	• textcase
• etoolbox	• lineno	• xstring
• cleveref	• aliascnt	• geometry

94 3. Maths: Environments and formulas

95 3.1. Mathematics environments

96 The authors are requested to use predefined mathematics environments the
 97 list of which is presented below:

98 • definition (`\begin{definition}...\end{definition}`)
 99 • theorem (`\begin{theorem}...\end{theorem}`)
 100 • remark (`\begin{remark}...\end{remark}`)
 101 • proposition (`\begin{proposition}...\end{proposition}`)
 102 • corollary (`\begin{corollary}...\end{corollary}`)
 103 • fact (`\begin{fact}...\end{fact}`)
 104 • conjecture (`\begin{conjecture}...\end{conjecture}`)

- 105 • lemma (`\begin{lemma}...\end{lemma}`)
- 106 • example (`\begin{example}...\end{example}`)
- 107 • claim (`\begin{claim}...\end{claim}`)
- 108 • proof (`\begin{proof}...\end{proof}`).

109 Each of the above-mentioned environments (except for *proof*) has its un-
 110 numbered version which will be yielded if an asterisk is added to the
 111 environment command (e.g., `\begin{example*}...\end{example*}`).

112 In case the author wants to use a mathematics environment which is
 113 not listed above, they should define it in the preamble in a standard
 114 `amsthm`-manner and assign to it one of the following theorem styles:

- 115 • definition
- 116 • plain
- 117 • remark.

118 The anchor for numbering should be `theorem`. For instance:

```
119     \theoremstyle{definition}
120     \newtheorem{statement}[theorem]{Statement}
```

121 If one wants the newly introduced environment to properly cooperate with
 122 the `cleveref` package, they should put in the preamble the following lines
 123 of code (below the exemplary new environment is `Statement` defined in the
 124 `definition` style):

```
125     \theoremstyle{definition}
126     \newaliascnt{Statement}{theorem}
127     \newtheorem{statement}[Statement]{Statement}
128     \aliascntresetthe{Statement}
```

129 \crefname{Statement}{statement}{statements}

Below come some examples of usage of mathematical environments.

DEFINITION 3.1 (Strong finite model property [2, Sect. 6.2]). Let Λ be a normal modal logic, \mathbf{M} a set of finitely based models such that $\Lambda = \Lambda_{\mathbf{M}}$, and f a function mapping natural numbers to natural numbers. Λ has the $f(n)$ -size model property with respect to \mathbf{M} if every Λ -consistent formula ϕ is satisfiable in a model in \mathbf{M} containing at most $f(|\phi|)$ states.

Λ has the strong finite model property with respect to \mathbf{M} if there is a
 computable function f such that Λ has the $f(n)$ -size model property with
 respect to \mathbf{M} . Λ has the polysize model property with respect to \mathbf{M} if there
 is a polynomial p such that Λ has the $p(n)$ -size model property with respect
 to \mathbf{M} .

Λ has the $f(n)$ -size model property (respectively, strong finite model property, polysize model property) if there is a set of finitely based models \mathbf{M} such that $\Lambda = \Lambda_{\mathbf{M}}$ and Λ has the $f(n)$ -size model property (respectively, strong finite model property, polysize model property) with respect to \mathbf{M} .

LEMMA 3.2 (Zorn's Maximum Principle [8]). *In a closed set \mathfrak{A} of sets A there exists at least one, A^* , not contained as a proper subset in any other $A \in \mathfrak{A}$.*

THEOREM 3.3 (McKinsey & Tarski [4]). $S4 \vdash \varphi$ iff $\mathfrak{A}_X \models \varphi$ for every
dense-in-itself metrizable space X .

150 CONJECTURE (Goldbach). Every even integer greater than 2 can be ex-
151 pressed as the sum of two prime numbers.

152 *Remark 3.4.* Every countable subset of \mathbb{R} has Lebesgue measure 0.

If a list (such as the `itemize` or `enumerate` environment) is placed at the beginning of a mathematical environment such as `definition`, `theorem`, `proof`, it automatically starts in a new line.

156 FACT 3.5 (Axioms of ZFC [3]).

157 AXIOM 0. *Set existence.*

158 $\exists x(x = x).$

159 AXIOM 1. *Extensionality*.

$$160 \quad \forall x \forall y (\forall z (z \in x \leftrightarrow z \in y) \rightarrow x = y).$$

161 AXIOM 2. *Foundation*.

$$162 \quad \forall x [\exists y (y \in x) \rightarrow \exists y (y \in x \wedge \neg \exists z (z \in x \wedge z \in y))].$$

163 AXIOM 3. *Comprehension scheme*. For each formula ϕ with free vari-
 164 ables among x, z, w_1, \dots, w_n ,

$$165 \quad \forall z \forall w_1, \dots, w_n \exists y \forall x (x \in y \leftrightarrow x \in z \wedge \phi).$$

166 AXIOM 4. *Pairing*.

$$167 \quad \forall x \forall y \exists z (x \in z \wedge y \in z).$$

168 AXIOM 5. *Union*.

$$169 \quad \forall \mathcal{F} \exists A \forall Y \forall x (x \in Y \wedge Y \in \mathcal{F} \rightarrow x \in A).$$

170 AXIOM 6. *Replacement Scheme*. For each formula ϕ with free variables
 171 among x, y, A, w_1, \dots, w_n ,

$$172 \quad \forall A \forall w_1, \dots, w_n [\forall x \in A \exists! y \phi \rightarrow \exists Y \forall x \in A \exists y \in Y \phi].$$

173 On the basis of Axioms 0, 1, 3, 4, 5 and 6, one may define \subset (subset),
 174 \emptyset (empty set), S (ordinal successor; $S(x) = x \cup \{x\}$), and the notion of
 175 wellordering. The following axioms are then defined.

176 AXIOM 7. *Infinity*.

$$177 \quad \exists x (\emptyset \in x \wedge \forall y \in x (S(y) \in x)).$$

178 AXIOM 8. *Power set*.

$$179 \quad \forall x \exists y \forall z (z \subset x \rightarrow z \in y).$$

AXIOM 9. *Choice.*

$$\forall A \exists R (R \text{ well orders } A).$$

COROLLARY 3.6 (van Benthem [6]). E is not provably arithmetical in ZF .

PROOF: $ZF + AC \vdash E(\phi^m, \phi^o)$ and $ZF \vdash E(\phi^m, \phi^o) + AC^{u0}$. The latter implies, by Jech's result, that $\sim ZF \vdash E(\phi^m, \phi^o)$. But then E cannot be provably arithmetical in ZF , since $ZF + AC$ is conservative over ZF with respect to arithmetical statements. (If ϕ is arithmetical, i.e., all quantifiers in ϕ are relativized to ω , and $ZF + AC \vdash \phi$, then, since $ZF \vdash (ZF)^L$ and $ZF \vdash (AC)^L$, $ZF \vdash \phi^L$, where L defines the constructible universe. Now ω is absolute and, therefore, $ZF \vdash \phi$.) \square

PROPOSITION 3.7 (Segerberg [5]). Suppose that L is a classical system. Let \mathcal{C} be any class of frames. If every modal axiom of L is valid in \mathcal{C} , then L is consistent with respect to \mathcal{C} .

PROOF: The proof goes by induction on the length of derivations in L . Every nonmodal axiom is easily seen to be valid in \mathcal{C} . The modal axioms are valid in \mathcal{C} by hypothesis.

Suppose A and $A \rightarrow B$ are valid in \mathcal{C} . Let M be any model on any frame in \mathcal{C} . Take any w in M . Then $M, w \models A$ and $M, w \models A \rightarrow B$. So, by truth definition, $M, w \models B$. Hence MP preserves validity in \mathcal{C} .

Suppose finally that $A \leftrightarrow B$ is valid in \mathcal{C} . Let M be any model on any frame in \mathcal{C} . Since $A \leftrightarrow B$ is true in M , $\|A\|^M = \|B\|^M$. Then $A \leftrightarrow B$ must hold at every point in M . Hence RE preserves validity in \mathcal{C} . \square

3.2. Mathematical formulas

Below are some examples of mathematical formulas.

The so-called Dirac delta is a measure $\delta(x) : \mathcal{B}(\mathbb{R}) \rightarrow \overline{\mathbb{R}}_+$ defined as follows:

$$\delta(A) = \begin{cases} 1, & \text{if } 0 \in A, \\ 0, & \text{if } 0 \notin A. \end{cases} \quad (3.1)$$

If we switch to informal definition, then the formula (3.1) is replaced by:

$$\delta(x) = \begin{cases} +\infty, & \text{if } x = 0, \\ 0, & \text{if } x \neq 0. \end{cases} \quad (3.2)$$

Here is a simple sequent-based proof of the formula $((A \rightarrow C) \vee (B \rightarrow C)) \rightarrow ((A \wedge B) \rightarrow C)$:

$$\frac{\frac{\frac{A, B, C \vdash C}{A, B, A \rightarrow C \vdash C} (\text{Ax}) (\text{MP}) \quad \frac{\frac{A, B, C \vdash C}{A, B, B \rightarrow C \vdash C} (\text{Ax}) (\text{MP})}{A, B, (A \rightarrow C) \vee (B \rightarrow C) \vdash C} (\vee \vdash)}{\frac{\frac{A \wedge B, (A \rightarrow C) \vee (B \rightarrow C) \vdash C}{(A \rightarrow C) \vee (B \rightarrow C) \vdash A \wedge B \rightarrow C} (\wedge \vdash)}{\frac{(A \rightarrow C) \vee (B \rightarrow C) \vdash A \wedge B \rightarrow C}{\vdash ((A \rightarrow C) \vee (B \rightarrow C)) \rightarrow (A \wedge B \rightarrow C)} (\vdash \rightarrow)}$$

And here is a formula that estimates the number of elements of a structure yielded by a generating stream reasoning algorithm for DatalogMTL (see [7]):

$$\left(4 \cdot \left(\frac{w + 2 \cdot \text{step}}{\text{gcd}(\mathcal{T}_I \cup \mathbb{N} \cup \{\text{step}\})} + 1 \right)^2 \right) \cdot \mathsf{P} \cdot |\mathcal{O}_I|^A \quad (3.3)$$

4. Sectioning: This is a section header

Here come the contents of the section.

4.1. This is a subsection header

Here come the contents of the subsection.

4.1.1. This is a subsubsection header

Here come the contents of the subsubsection.

This is a paragraph header Here come the contents of the paragraph.

223 *This is a subparagraph header* Here come the contents of the subpara-
 224 graph.

225 5. Bibliography management

226 The authors are requested to use `BIBTEX` to process their bibliographies. It
 227 involves creating a separate `.bib` file with bibliography entries and putting
 228 it in the same folder as the main `.tex` source file.

229 In order for `LATEX` to generate a bibliography which will be formatted in
 230 accordance with `BSLbibstyle`, one needs to execute the following sequence
 231 of commands:

232 `\bibliographystyle{BSLbibstyle}`

233 `\bibliography{#1}`

234 in the place where the bibliography is to be displayed (`#1` is the name (with-
 235 out the file type extension) of the `.bib` file with bibliography entries). The
 236 authors can use the attached bibliography template (named `biblio.bib`)
 237 to create their own bibliography file. More information about bibliography
 238 management with `BIBTEX` see [1].

239 There are three rules the authors are asked to abide by when preparing
 240 their `.bib` files:

241 **Rule 1:** Always use journal names and names of proceedings series in their
 242 **full form**. For instance: `Journal of Logic and Computation` rather
 243 than `(J. Logic Comput.)` or `Lecture Notes in Computer Science`
 244 rather than `LNCS`.

245 **Rule 2:** Whenever for a given publication occurring in the bibliography
 246 there exists a DOI number, include it in the bibliography entry in
 247 the `.bib` file. Use, however, **plain DOI numbers** rather than
 248 full links, so for example `10.2307/2267577` rather than
 249 `http://dx.doi.org/10.2307/2267577`.

250 **Rule 3:** When providing page numbers of a given bibliography entry use
 251 an ndash (i.e., `--`) rather than a hyphen (i.e., `-`) to separate the first

252 page and the last page numbers. For example: `pages = {153--169}`
 253 rather than `pages = {153-169}`.

254 **Acknowledgements.** Acknowledgements such as thanks for reviewers'
 255 remarks can be put here.

256 References

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