

## Here is the Title

First Author<sup>1,\*</sup> and Co-Author(s)<sup>2</sup>

<sup>1</sup> *address of First Author*

<sup>2</sup> *address of Co-Author(s)*

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**Abstract.** The abstract should provide the application context and briefly summarise the main findings. It should not be too long — normally no longer than half a page.

**AMS subject classifications:** 65M10, 78A48

**Key words:** At least 3 items and at most 5 items.

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## 1 Preparation of manuscript

### 1.1 Formulas

#### 1.1.1 Inline mathematical expressions

In inline mathematical expressions do not use the commands `\left`, `\right`, `\big`, `\Big`, `\bigg`, `\Bigg`, `\displaystyle`, etc., which can enlarge the brackets or the symbols.

#### 1.1.2 One-line equations

For non-numbered one-line equations, use the command `equation*` rather than `$$` `$$` and `\[` `\]`. For example, the equation

$$a \neq b$$

should be written as

```
\begin{equation*}
  a \neq b
\end{equation*}
```

The numbered one-line equations should be typewritten by using `equation` environment. For example,

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\*Corresponding author. *Email addresses:* `fauthor@edu.eajam` (F. Author), `Co-Author(s)@edu.eajam` (A. Co-Author)

```
\begin{equation}\label{eq1.1}
ax=c.
\end{equation}
```

to obtain

$$ax = c. \tag{1.1}$$

Avoid using the `align` or `align*` environment.

### 1.1.3 Multi-line equations

**Avoid using the obsolete `eqnarray` or `eqnarray*` environment, which has several bugs.**

For non-numbered multi-line equations, use the commands `align*`, `alignat*`. For example:

**Example 1.1.** The equations

$$\begin{aligned} v_h(x,y) &= V_1(x,y), \\ v_h^+(x,y) &= v_h^-(x,y). \end{aligned}$$

can be written as

```
\begin{align*}
&v_h(x,y)=V_1(x,y), \\
&v_h^+(x,y)=v_h^-(x,y).
\end{align*}
```

**Example 1.2.** The equations

$$\begin{aligned} V(x) &= \frac{K(\epsilon)\epsilon}{\rho}, & x \in (0, x^*], \\ V'(x) &= \frac{M}{m} - \sqrt{\frac{4\rho V(x)}{m}}, & x > x^*. \end{aligned}$$

can be written as

```
\begin{alignat*}{2}
&V(x)=\frac{K(\epsilon)\epsilon}{\rho}, && \quad x \in (0, x^*], \\
&V'(x)=\frac{M}{m} - \sqrt{\frac{4\rho V(x)}{m}}, && \quad x > x^*.
\end{alignat*}
```

**Example 1.3.** The equation

$$\begin{aligned}
 |d^V(x, \lambda)| &= \left| \int_{\Gamma} \{V(x - \alpha(p(\lambda), \gamma, x)) - V(x)\} \right| \\
 &\leq \int_{\Gamma} |V(x - \alpha(p(\lambda), \gamma, x))| \mu(d\gamma) \\
 &\leq M \left\{ 1 + \int_{\Gamma} (x - \alpha(p(\lambda), \gamma, x))^2 \mu(d\gamma) \right\} x^2 \\
 &\leq M(1 + x^2) + \lambda(0)K + Mx
 \end{aligned}$$

can be written as

```

\begin{align*}
& \big|d^V(x, \lambda)\big| \\
& = \left| \int_{\Gamma} \{V(x - \alpha(p(\lambda), \gamma, x)) - V(x)\} \right| \\
& \leq \int_{\Gamma} |V(x - \alpha(p(\lambda), \gamma, x))| \mu(d\gamma) \\
& \leq M \left\{ 1 + \int_{\Gamma} (x - \alpha(p(\lambda), \gamma, x))^2 \mu(d\gamma) \right\} x^2 \\
& \leq M(1 + x^2) + \lambda(0)K + Mx
\end{align*}

```

**Example 1.4.** The equation

$$\begin{aligned}
 |d^V(x, \lambda)| &= \left| \int_{\Gamma} \{V(x - \alpha(p(\lambda), \gamma, x)) - V(x)\} \right| \\
 &\quad + \int_{\Gamma} |V(x - \alpha(p(\lambda), \gamma, x))| \mu(d\gamma) \\
 &\leq M \left\{ 1 + \int_{\Gamma} (x - \alpha(p(\lambda), \gamma, x))^2 \mu(d\gamma) \right\} x^2 \\
 &\quad \times M(1 + x^2) + \lambda(0)K + Mx
 \end{aligned}$$

can be written as

```

\begin{align*}
& \big|d^V(x, \lambda)\big| \\
& = \left| \int_{\Gamma} \{V(x - \alpha(p(\lambda), \gamma, x)) - V(x)\} \right| \\
& \quad + \int_{\Gamma} |V(x - \alpha(p(\lambda), \gamma, x))| \mu(d\gamma) \\
& \leq M \left\{ 1 + \int_{\Gamma} (x - \alpha(p(\lambda), \gamma, x))^2 \mu(d\gamma) \right\} x^2 \\
& \quad \times M(1 + x^2) + \lambda(0)K + Mx
\end{align*}

```

Thus numbered equations should be typewritten by using `equation`, `align`, `alignat`, `aligned` environments.

**Example 1.5.** The equations

$$v_h(x,y) = V_1(x,y), \quad (1.2)$$

$$v_h^+(x,y) = v_h^-(x,y). \quad (1.3)$$

can be written as

```
\begin{align}
&v_h(x,y)=V_1(x,y), \label{eq2.2} \\
&v_h^+(x,y)=v_h^-(x,y). \label{eq2.3}
\end{align}
```

**Example 1.6.** The equations

$$v_h(x,y) = V_1(x,y), \quad (1.4)$$

$$v_h^+(x,y) = v_h^-(x,y).$$

can be written as

```
\begin{equation} \label{eq2.4}
\begin{aligned}
&v_h(x,y)=V_1(x,y), \\
&v_h^+(x,y)=v_h^-(x,y).
\end{aligned}
\end{equation}
```

**Do not use the construction**

```
\begin{equation*}
\begin{aligned}
&v_h(x,y)=V_1(x,y), \\
&v_h^+(x,y)=v_h^-(x,y).
\end{aligned}
\end{equation*}
```

It should be `align*` instead (see Example 1.1).

**Example 1.7.** The equation

$$v_h(x,y) = V_1(x,y) + v_h^-(x,y) + V_2(x,y) + v_h^+(x,y). \quad (1.5)$$

can be written as

```
\begin{align}
v_h(x,y) &= V_1(x,y) + v_h^-(x,y) \nonumber \\
&\quad + V_2(x,y) + v_h^+(x,y). \label{eq2.5}
\end{align}
```

or

```
\begin{align}\label{eq2.5}
v_h(x,y)&=V_1(x,y)+v_h^-(x,y)\nonumber\\
&\quad +V_2(x,y)+v_h^+(x,y).
\end{align}
```

The number should be on the last line.

**Example 1.8.** The equations

$$V(x) = \frac{K(\epsilon)\epsilon}{\rho}, \quad x \in (0, x^*], \quad (1.6)$$

$$V'(x) = \frac{M}{m}, \quad x > x^*. \quad (1.7)$$

can be written as

```
\begin{alignat}{2}
& V(x) = \frac{K(\epsilon)\epsilon}{\rho}, \\
& \quad x \in (0, x^*], \quad \label{eq3.1} \\
& V'(x) = \frac{M}{m}, \\
& \quad x > x^*. \quad \label{eq3.2}
\end{alignat}
```

Equations should be cited by using the `\eqref` command and the form `\eqref{eq2.3}` or `Eq.~\eqref{eq2.2}`. In the text they appear as (1.3) or Eq. (1.2).

## 1.2 Other examples

### 1.2.1 Cases

Preferred format is `cases`, not `aligned`, `array`, etc.

**Example 1.9.**

$$p^*(x) = \begin{cases} M - \epsilon, & 0 < x < x^*, \\ -\sqrt{\rho V(x)}, & x \geq x^*. \end{cases} \quad (1.8)$$

```
\begin{equation} \label{eq:optimaldemandexam1-case2}
p^*(x) =
\begin{cases}
M - \epsilon, & 0 < x < x^*, \\
-\sqrt{\rho V(x)}, & x \geq x^*.
\end{cases}
\end{equation}
```

or

$$p^*(x) = \begin{cases} M - \epsilon, & 0 < x < x^*, \\ -\sqrt{\rho V(x)}, & x \geq x^*. \end{cases}$$

```
\begin{equation*}
  p^*(x)=
  \begin{cases}
    M-\epsilon, & 0 < x < x^*, \\
    -\sqrt{\rho V(x)}, & x \geq x^*.
  \end{cases}
\end{equation*}
```

### 1.3 Theorems, corollaries, lemmas, definitions

For theorems, lemmas, corollaries, propositions, definitions, examples and remarks special environments are predefined. Please use the following constructions:

#### Theotems

```
\begin{theorem}
Text of theorem.
\end{theorem}
```

or

```
\begin{theorem}\label{thm1}
Text of theorem.
\end{theorem}
```

**Theorem 1.1.** *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB = BA = E$ , where  $E$  is the identity matrix.*

Results from other sources can be written in the form

```
\begin{theorem}[cf.~Author \& Co-Author~\cite{firstauthor}]\label{thm1}
Text of theorem.
\end{theorem}
```

**Theorem 1.2** (cf. Author & Co-Author [1]). *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB = BA = E$ , where  $E$  is the identity matrix.*

### Lemmas

```
\begin{lemma}
Text of lemma.
\end{lemma}
```

or

```
\begin{lemma}\label{lem1}
Text of lemma.
\end{lemma}
```

**Lemma 1.1.** *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB = BA = E$ , where  $E$  is the identity matrix.*

Results from other sources can be written in the form

```
\begin{lemma}[cf.~Author \& Co-Author~\cite{firstauthor}]\label{lem1}
Text of lemma.
\end{lemma}
```

**Lemma 1.2** (cf. Author & Co-Author [1]). *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB = BA = E$ , where  $E$  is the identity matrix.*

### Corollaries

```
\begin{corollary}
Text of corollary.
\end{corollary}
```

or

```
\begin{corollary}\label{clr1}
Text of corollary.
\end{corollary}
```

**Corollary 1.1.** *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB = BA = E$ , where  $E$  is the identity matrix.*

Results from other sources can be written in the form

```
\begin{corollary}[cf.~Author \& Co-Author~\cite{firstauthor}]\label{clr1}
Text of corollary.
\end{corollary}
```

**Corollary 1.2** (cf. Author & Co-Author [1]). *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB=BA=E$ , where  $E$  is the identity matrix.*

### Propositions

```
\begin{proposition}
Text of proposition.
\end{proposition}
```

or

```
\begin{proposition}\label{prop1}
Text of proposition.
\end{proposition}
```

**Proposition 1.1.** *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB=BA=E$ , where  $E$  is the identity matrix.*

Results from other sources can be written in the form

```
\begin{proposition}[cf.~Author \& Co-Author~\cite{firstauthor}]\label{prop1}
Text of proposition.
\end{proposition}
```

**Proposition 1.2** (cf. Author & Co-Author [1]). *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB=BA=E$ , where  $E$  is the identity matrix.*

### Definitions

```
\begin{definition}
Text of definition.
\end{definition}
```

or

```
\begin{definition}\label{def1}
Text of definition.
\end{definition}
```

**Definition 1.1.** *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB=BA=E$ , where  $E$  is the identity matrix.*

Results from other sources can be written in the form

```
\begin{definition}[cf.~Author \& Co-Author~\cite{firstauthor}]\label{def1}
Text of definition.
\end{definition}
```

**Definition 1.2** (cf. Author & Co-Author [1]). *A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB=BA=E$ , where  $E$  is the identity matrix.*

### Remarks

```
\begin{remark}
Text of remark.
\end{remark}
```

or

```
\begin{remark}\label{rem1}
Text of remark.
\end{remark}
```

**Remark 1.1.** A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB=BA=E$ , where  $E$  is the identity matrix.

Results from other sources can be written in the form

```
\begin{remark}[cf.~Author \& Co-Author~\cite{firstauthor}]\label{rem1}
Text of remark.
\end{remark}
```

**Remark 1.2** (cf. Author & Co-Author [1]). A matrix  $A$  is called invertible if there exists a matrix  $B$  such that  $AB=BA=E$ , where  $E$  is the identity matrix.

### Examples

```
\begin{example}
Text of example.
\end{example}
```

or

```
\begin{example}\label{ex1}
Text of example.
\end{example}
```

**Example 1.10.**  $Z = -\text{Id}_2$ . This serves as the most rudimentary case for a bilayer plate, as delineated earlier. The absolute minimizer is a cylinder of radius 1 with energy 20.

Results from other sources can be written in the form

```
\begin{example}[cf.~Author \& Co-Author~\cite{firstauthor}]\label{ex1}
Text of example.
\end{example}
```

**Example 1.11** (cf. Author & Co-Author [1]).  $Z = -\text{Id}_2$ . This serves as the most rudimentary case for a bilayer plate, as delineated earlier. The absolute minimizer is a cylinder of radius 1 with energy 20.

For typesetting your proofs use predefined environment `proof`.

```
\begin{proof}
Text of proof.
\end{proof}
```

*Proof.* For the solution  $u$  that minimize the energy (3.1) under isometric constraint (3.2), it is straightforward that  $[u] = I[u] \geq 0$ . Consider the spontaneous curvature  $Z$  with  $Z_{11} = 1$  and  $Z_{ij} = 0$  otherwise. Since

$$I[u] = E[u] + \beta C[u]^2 \leq -\frac{4|\Omega|}{625\beta},$$

when  $\beta \geq 1$ , we conclude that the lower bound of the energy error is at least  $O(1/\beta)$ .  $\square$

## 1.4 Figures

Figures should be in a finished form suitable for publication (in eps format). Number figures consecutively with Arabic numerals. Lettering on drawings should be generated by high-resolution computer graphics and large enough to withstand appropriate reduction for publication.

Here are some templates for figures:

```
\begin{figure}[!tbb]
\centering
\includegraphics[scale=0.5]{filename}
\caption {Example 1.}
\label{fig1}
\end{figure}
```

You can also use following parameters:

```
[width=1in,height=2in]
[width=40mm] or [height=2cm]
```

For two images you can use

```
\begin{figure}[!tbh]
\centering
\begin{minipage}{0.47\textwidth}
\centering
\includegraphics[height=3.5cm]{filename}
\end{minipage}
\begin{minipage}{0.47\textwidth}
\centering
\includegraphics[height=3.5cm]{filename}
\end{minipage}
\caption {Example 2.}
\label{fig2}
\end{figure}
```

or

```
\begin{figure}[!tbh]
\centering
\begin{minipage}{0.45\textwidth}
\centering
\includegraphics[width=4cm,height=6cm]{filename}\\
\scriptsize{a)}
\end{minipage}
\begin{minipage}{0.45\textwidth}
\centering
\includegraphics[width=4cm,height=6cm]{filename}\\
\scriptsize{b)}
\end{minipage}
\caption {Example 3.}
\label{fig2}
\end{figure}
```

if you need captions for the images.

## 1.5 Tables

Here are some templates for tables:

Table 1: Example 1.

$N_t$	$L_\infty$ Error	CR	$L_\infty$ Error	CR
8	6.3603e-01	-	5.2903e-02	-
16	2.1078e-01	1.59	1.0824e-02	2.29
32	7.9903e-02	1.40	2.6661e-03	2.02
64	3.5422e-02	1.17	6.7627e-04	1.98

```

\begin{table}[!tbh]
\caption{Example 1.}
\label{ex_1}
\centering
\medskip\small\renewcommand{\arraystretch}{1.15}
\begin{tabular}{||ccccc||}
\hline
 $N_t$  &  $L_\infty$  Error & CR &  $L_\infty$  Error & CR \\
\hline
8 & 6.3603e-01 & - & 5.2903e-02 & - \\
16 & 2.1078e-01 & 1.59 & 1.0824e-02 & 2.29 \\
32 & 7.9903e-02 & 1.40 & 2.6661e-03 & 2.02 \\
64 & 3.5422e-02 & 1.17 & 6.7627e-04 & 1.98 \\
\hline
\end{tabular}
\end{table}

```

Table 2: Example 2.

	$N_t$	$L_\infty$ Error	CR	$L_\infty$ Error	CR
1	8	6.3603e-01	-	5.2903e-02	-
2	16	2.1078e-01	1.59	1.0824e-02	2.29
3	32	7.9903e-02	1.40	2.6661e-03	2.02
4	64	3.5422e-02	1.17	6.7627e-04	1.98

```

\begin{table}[!tbh]
\caption{Example 2.}
\label{ex_2}
\centering
\medskip\small\renewcommand{\arraystretch}{1.15}
\begin{tabular}{||1|cccc||}
\hline
& \mathit{N}_t & \mathit{L}_\infty \text{ Error} & \text{CR} & \mathit{L}_\infty \text{ Error} & \text{CR} & \\
\hline
1 & 8 & 6.3603e-01 & - & 5.2903e-02 & - & \\
2 & 16 & 2.1078e-01 & 1.59 & 1.0824e-02 & 2.29 & \\
3 & 32 & 7.9903e-02 & 1.40 & 2.6661e-03 & 2.02 & \\
4 & 64 & 3.5422e-02 & 1.17 & 6.7627e-04 & 1.98 & \\
\hline
\end{tabular}
\end{table}

```

Table 3: Example 3.

Accuracy of time discretisation, $N_x \times N_y = 4096^2$					
$N_t$	$L_\infty$ Error	CR	$N_t$	$L_\infty$ Error	CR
8	6.3603e-01	-	4	8.0540e-02	-
16	2.1078e-01	1.59	8	7.7251e-03	3.38
32	7.9903e-02	1.40	16	1.0326e-03	2.90
64	3.5422e-02	1.17	32	1.4975e-04	2.79

```

\begin{table}[!tbh]
\caption{Example 3.}
\label{t3}
\centering
\medskip\small\renewcommand{\arraystretch}{1.15}
\begin{tabular}{||ccc|ccc||}
\hline
\multicolumn{6}{|c|}{Accuracy of time discretisation,}
\mathit{N}_x \times \mathit{N}_y = 4096^2} \\
\hline
\mathit{N}_t & \mathit{L}_\infty \text{ Error} & \text{CR} & \mathit{N}_t & \mathit{L}_\infty \text{ Error} & \text{CR} & \\
\hline
8 & 6.3603e-01 & - & 4 & 8.0540e-02 & - & \\
16 & 2.1078e-01 & 1.59 & 8 & 7.7251e-03 & 3.38 & \\
32 & 7.9903e-02 & 1.40 & 16 & 1.0326e-03 & 2.90 & \\
64 & 3.5422e-02 & 1.17 & 32 & 1.4975e-04 & 2.79 & \\
\hline
\end{tabular}
\end{table}

```

Table 4: Example 4.

	$N_t$	$L_\infty$ Error	CR	$L_\infty$ Error	CR
1	8	6.3603e-01	-	5.2903e-02	-
2	16	2.1078e-01	1.59	1.0824e-02	2.29
3	32	7.9903e-02	1.40	2.6661e-03	2.02
4	64	3.5422e-02	1.17	6.7627e-04	1.98

```

\begin{table}[!tbh]
\caption{Example 4.}
\label{t4}
\centering
\medskip\small\renewcommand{\arraystretch}{1.15}
\begin{tabular}{|l|ccccc|}
\hline
&  $N_t$  &  $L_\infty$  Error & CR &  $L_\infty$  Error & CR & \\
\cline{3-5}
1 & 8 & 6.3603e-01 & - & 5.2903e-02 & - \\
2 & 16 & 2.1078e-01 & 1.59 & 1.0824e-02 & 2.29 & \\
3 & 32 & 7.9903e-02 & 1.40 & 2.6661e-03 & 2.02 & \\
4 & 64 & 3.5422e-02 & 1.17 & 6.7627e-04 & 1.98 & \\
\hline
\end{tabular}
\end{table}

```

For big tables you can change font size

```

\medskip\small\renewcommand{\arraystretch}{1.15}
to
\medskip\footnotesize\renewcommand{\arraystretch}{1.15}
and/or reduce space between columns
\addtolength{\tabcolsep}{-0.9mm}
and/or reduce space between rows
\medskip\small\renewcommand{\arraystretch}{1.02}

```

## References

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