Finite Volumen Verfahren erster Ordnung

University of Stuttgart

Studentenvortrag
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Presentation Overview

Schwache Form

Die hyperbolische Differenzialgleichung

$$\mathrm{U}_t + \nabla \cdot \mathbb{F}^{\mathrm{C}}(\mathrm{U}) = 0 \tag{1}$$

stellt eine Anforderung an die Differenzierbarkeit.

- Es treten Unstetigkeiten im Strömungsfeld auf

  $\Rightarrow$ Schwache Form

$$\int_{\mathrm{V}} \mathrm{U}_t \phi \, d\mathrm{x} + \int_{\mathrm{V}} \nabla \cdot \mathbb{F}^{\mathrm{C}}(\mathrm{U}) \phi d\mathrm{x} = 0, \qquad \mathrm{x} = [x, y]^T \tag{2}$$

Anwendung des Satzes von Gauß ergibt

$$\mathrm{V}_i \mathrm{U}_{i,t} + \oint_{\partial \mathrm{V}_i} \mathbb{F}^{\mathrm{C}}(\mathrm{U}_{\mathrm{RP}} \cdot \mathrm{n} \, dS) = 0 \tag{3}$$

Lists

Bullet Points and Numbered Lists

- Lorem ipsum dolor sit amet, consectetur adipiscing elit
- Aliquam blandit faucibus nisi, sit amet dapibus enim tempus
  - Lorem ipsum dolor sit amet, consectetur adipiscing elit
  - Nam cursus est eget velit posuere pellentesque
- Nulla commodo, erat quis gravida posuere, elit lacus lobortis est, quis porttitor odio mauris at libero

1. Nam cursus est eget velit posuere pellentesque
2. Vestibulum faucibus velit a augue condimentum quis convallis nulla gravida

Blocks of Highlighted Text

Block Title

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer lectus nisl, ultricies in feugiat rutrum, porttitor sit amet augue.

Example Block Title

Aliquam ut tortor mauris. Sed volutpat ante purus, quis accumsan.

Alert Block Title

Pellentesque sed tellus purus. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos himenaeos.

Suspendisse tincidunt sagittis gravida. Curabitur condimentum, enim sed venenatis rutrum, ipsum neque consectetur orci.

Multiple Columns

Subtitle

Heading

1. Statement
2. Explanation
3. Example

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer lectus nisl, ultricies in feugiat rutrum, porttitor sit amet augue. Aliquam ut tortor mauris. Sed volutpat ante purus, quis accumsan dolor.

Table

Subtitle

Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table: Table caption

Figure

Figure: Creodocs logo.

Definitions & Examples

Definition

A prime number is a number that has exactly two divisors.

Example

- 2 is prime (two divisors: 1 and 2).
- 3 is prime (two divisors: 1 and 3).
- 4 is not prime (three divisors: 1, 2, and 4).

You can also use the `theorem`, `lemma`, `proof` and `corollary` environments.

Theorem, Corollary & Proof

Theorem (Mass–energy equivalence)

$E = mc^2$

Corollary

$x + y = y + x$

Proof.

$\omega + \phi = \epsilon$ □

Equation

$$\cos^3\theta = \frac{1}{4}\cos\theta + \frac{3}{4}\cos 3\theta \tag{4}$$

Verbatim

Example (Theorem Slide Code)

```
\begin{frame}
\frametitle{Theorem}
\begin{theorem}[Mass--energy equivalence]
$E = mc^2$
\end{theorem}
\end{frame}
```

Slide without title.

Citing References

An example of the `\cite` command to cite within the presentation:

This statement requires citation [Smith, 2022, Kennedy, 2023].

References


John Smith (2022)
Publication title
Journal Name 12(3), 45 – 678.


Annabelle Kennedy (2023)
Publication title
Journal Name 12(3), 45 – 678.

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The End

Questions? Comments?