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R. S. Varga and M. A. Marinc
GROUP DIFFUSION EQUATIONS
TIME-DEPENDENT AND TIME-INDEPENDENT MULTI-
THE THEORY FOR THE NUMERICAL SOLUTION OF
By R.S. Varney and M. Mantyla:

Diffusion Equations

The Theory for the Numerical Solution of

PITT USA
The Direct Transmission Formulation

The propagation matrices \( \mathbf{\Lambda} \) and \( \mathbf{\Gamma} \) are defined as:

\[
\mathbf{\Lambda} = e^{\mathbf{H}} \quad \text{and} \quad \mathbf{\Gamma} = e^{\mathbf{Q}}
\]

where

\[
\mathbf{H} = \mathbf{L} - \mathbf{M} \quad \text{and} \quad \mathbf{Q} = \mathbf{P} - \mathbf{R}
\]

and

\[
\mathbf{L} = \mathbf{A} - \mathbf{B} \quad \text{and} \quad \mathbf{R} = \mathbf{B} - \mathbf{A}
\]

are the interaction matrices.

The above equations define a common format with \( \mathbf{\Lambda} \) and \( \mathbf{\Gamma} \).

The Direct Transmission Formulation provides a common framework for the propagation matrices and their interaction matrices.

Discretization

The discretization of the propagation matrices and their interaction matrices is achieved by employing the finite difference method. The discretization process involves approximating the derivatives in the propagation matrices by finite differences. The finite difference approximations are defined as:

\[
\mathbf{\Lambda}_h = \frac{1}{h} \left( e^{\mathbf{H}_h} - 1 \right)
\]

where \( h \) is the discretization step size.

The discretization process is carried out by applying the finite difference approximations to the propagation matrices and their interaction matrices.

The discretization process is crucial for implementing the direct transmission formulation in practical scenarios.

The discretization process is carried out by applying the finite difference approximations to the propagation matrices and their interaction matrices.
The theorem in question asserts the equivalence:

\[ \mathcal{O} = \Omega \quad \text{if and only if} \quad \mathcal{O} = \Omega \]

where the metrics \( \mathcal{O} \) and \( \mathcal{O} \) are defined in terms of the

\[ \mathcal{O} = \begin{pmatrix} t & \mathcal{L} \\ \mathcal{L} & \mathcal{L} \end{pmatrix} \]

and the matrix \( \mathcal{L} \) is given by:

\[ \mathcal{L} = \begin{pmatrix} a & b \\ b & a \end{pmatrix} \]

It follows that:

\[ \mathcal{O} = \mathcal{O} \]

Furthermore, the condition that \( \mathcal{O} = \mathcal{O} \) implies:

\[ \mathcal{O} = \begin{pmatrix} t & \mathcal{L} \\ \mathcal{L} & \mathcal{L} \end{pmatrix} \]

and the determinant condition:

\[ \det(\mathcal{O}) = \det(\mathcal{O}) = 1 \]

Finally, we have:

\[ \mathcal{O} = \mathcal{O} \]

where \( \mathcal{O} \) is the identity matrix.
Continuous Space

\[ \begin{align*}
    \langle \phi \rangle_{\omega} &= \int_{\Omega} \phi(x) d\omega(x) \\
    \langle \phi \rangle_{\omega} &= \int_{\Omega} \phi(x) d\omega(x)
\end{align*} \]

CONCLUSION

The results of the present paper are expected to have a broad impact on the field of \textit{Continuous Space}.
The theorem is presented as follows:

\[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]

The proof structure is as follows:

1. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
2. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
3. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
4. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
5. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
6. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
7. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
8. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
9. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
10. \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]

The theorem is proven by induction on the number of elements in \( \mathcal{V} \) with the following steps:

- \[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]
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The theorem is then concluded as follows:

\[ \sum_{\mathcal{V} \in \mathcal{V}} \Phi_{\mathcal{V}} = \Phi \]

The proof is completed by showing that the equality holds for all elements \( \mathcal{V} \) in the set. The theorem is then proven.
The proof of this theorem can now be presented.

(1) First, let \( \Phi \) be a \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

(2) Second, let \( \Phi \) be any \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

(3) Third, let \( \Phi \) be any \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

(4) Fourth, let \( \Phi \) be any \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

(5) Fifth, let \( \Phi \) be any \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

(6) Sixth, let \( \Phi \) be any \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

(7) Seventh, let \( \Phi \) be any \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

(8) Eighth, let \( \Phi \) be any \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

(9) Ninth, let \( \Phi \) be any \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

(10) Tenth, let \( \Phi \) be any \( \omega \)-constant. Then, for any \( \Phi \), we have \( \Phi = \Phi \).

This follows immediately from the \( \omega \)-consistency of the system. Therefore, \( \Phi \) is a \( \omega \)-constant.

The complete \( \omega \)-consistency proof is now complete.