Producing MathML with Tralics

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DML2010 08 July 2010

A Theorem

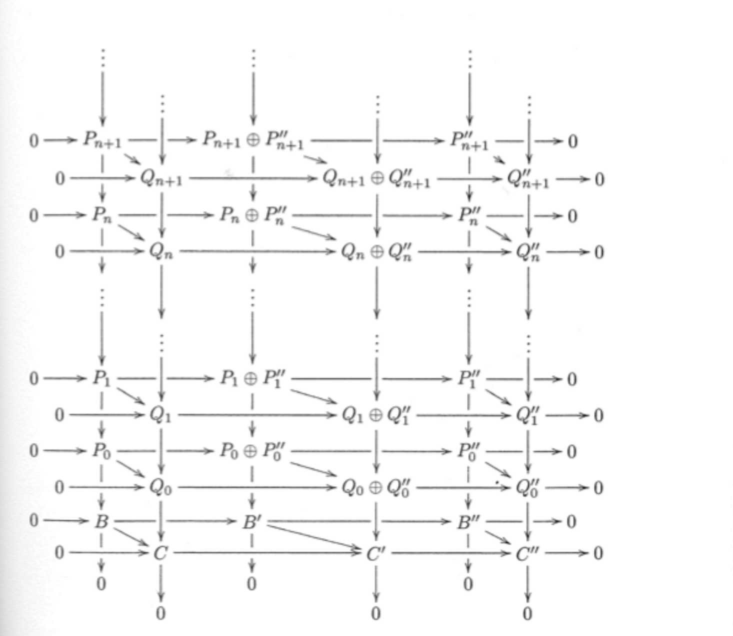
Scott Osborne, Basic Homological Algebra, p 144

Corollary 6.10 *Suppose the diagram*

$$\begin{array}{ccccccccc} 0 & \longrightarrow & B & \longrightarrow & B' & \longrightarrow & B'' & \longrightarrow & 0 \\ & & \downarrow & & \downarrow & & \downarrow & & \\ 0 & \longrightarrow & C & \longrightarrow & C' & \longrightarrow & C'' & \longrightarrow & 0 \end{array}$$

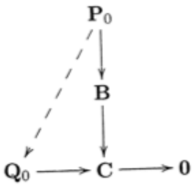
(with entries in ${}_R\mathbf{M}$) is commutative, with exact rows. Then, give
taneous projective resolutions of B, B', B'' and C, C', C'', there ex
forming a commutative diagram with exact rows and columns:

A theorem


0 → P_{n+1} → $P_{n+1} \oplus P''_{n+1}$ → P''_{n+1} → 0
0 → Q_{n+1} → $Q_{n+1} \oplus Q''_{n+1}$ → Q''_{n+1} → 0
0 → P_n → $P_n \oplus P''_n$ → P''_n → 0
0 → Q_n → $Q_n \oplus Q''_n$ → Q''_n → 0
0 → P_1 → $P_1 \oplus P''_1$ → P''_1 → 0
0 → Q_1 → $Q_1 \oplus Q''_1$ → Q''_1 → 0
0 → P_0 → $P_0 \oplus P''_0$ → P''_0 → 0
0 → Q_0 → $Q_0 \oplus Q''_0$ → Q''_0 → 0
0 → B → B' → B'' → 0
0 → C → C' → C'' → 0
0 0 0
0 0 0 0

A Proof

if the simultaneous resolutions of **B** and **C** are ...
sition 6.5). The construction is *identical* to that in the proof of Proposition 3.1, in boldface. For example, the arrow $\mathbf{P}_0 \dashrightarrow \mathbf{Q}_0$ comes from



filled in via Proposition 6.9. The remainder of the argument also works, bearing in mind that, in the notation of Proposition 3.1, $\operatorname{im} d_{n+1} = \ker d_n$: If K_n (respectively, K'_n, K''_n) is the kernel of $P_n \to P_{n-1}$ (respectively, $P'_n \to P'_{n-1}$, $P''_n \to P''_{n-1}$), then $0 \to K_n \to K'_n \to K''_n \to 0$ is short exact by Proposition 6.4 (condition (iv) is satisfied), so that $\mathbf{K}_n$ is an object in ${}_R\mathbf{Sh}$. Finally, the homotopy part of Proposition 3.1 does not appear here.

□

A Challenge

- Write the theorem as : $\forall B, B', B'', C, C', C''$, for all f_1, f_2, etc, such that [...], $\exists n \to P_n$, $\exists n \to Q_n$, $\exists n \to f_n$, such that [...]
- Formalize "let a boldface letter (eg $\mathbf{C}$) denote a short exact sequence denoted with the plainface letters, with primes attached (e.g. $0 \to C \to C' \to C'' \to 0$)".
- Write a proof without "the construction is identical to...", "the remainder of the argument also works", etc.
- Use a theorem prover that takes as a hint the objects that were used to produce the pictures.
- Put the theorem into an electronic data base.

Inria's activity Report

Inria is over 40 years old
First activity report with Latex in 1987
HTML version online since 1994 (Grif then latex2html)
First description of the Raweb in Gut1999, Lyon
Paper version until 1998 (Sophia: 600 A4 pages)
Size: 80 teams in 1998, 201 en 2009
XML version since 2002 on the Web
English language since 2003
Presentation of Tralics at EuroTeX 2003

RA1994 Introduction

Information

Les rapports d'activité 1994

Les projets de recherche

Vous pouvez accéder aux rapports d'activité des différents projets à partir :

- de la liste des projets de recherche
- de l'index des mots-clés

Les rapports d'activité des autres années

[Page d'accueil du serveur]

webmaster@inria.fr

RA1994 sample page

latex → SGML → HTML via Grif

Acquisition des connaissances et explications

Mots-clés: science cognitive, acquisition de connaissances, explication, assistance à l'utilisateur .

La construction d'un système à base de connaissances explicatif exige l'acquisition de connaissances explicatives telles que les stratégies explicatives utilisées lors des dialogues entre experts et utilisateurs potentiels. Il est donc important de modéliser l'interaction explicative (en particulier, à partir de l'analyse de tels dialogues explicatifs), ainsi que l'évaluation des explications obtenues. Les connaissances explicatives ainsi acquises peuvent ensuite être intégrées dans le module d'explication d'un système à base de connaissances.

[English Abstract]

[Table des Matières] [Index des mots-clés] [Index des personnes]

RA1994 sample page

Méthodes particulaires stochastiques

Participants:

- Mireille Bossy,
- Hervé Régnier,
- Denis Talay.

On appelle *équation de McKean-Vlasov* les E.D.P. non linéaires du type :

{Ut=0 = U0∂Ut∂τ=12∂2∂x2(UtR s(x,y)Ut(dy))-∂∂x(UtR b(x,y)Ut(dy)) , (x,t) ∈Rx[0,R],, La condition initiale U0 est de type densité de loi de probabilité. Au sens faible, la solution Ut de cette équation peut être reliée à la loi limite de particules en interaction faible de dynamique décrite par des *noyaux d'interaction* b(&Gmiddot; , &Gmiddot;), s(&Gmiddot; , &Gmiddot;) et un système d'équations différentielles stochastiques :

{X0i=X0i i = 1, ...,N.dXti=1NSj=1Nb(Xti,Xtj) dt + 1NSj=1Ns(Xti,Xtj) d wti Les résultats de propagation du chaos montrent que quand le nombre de particules tend vers l'infini, la mesure empirique µN(t) converge en probabilité vers Ut. A partir de cette interprétation probabiliste, M. Bossy et D. Talay ont développé un algorithme d'approximation de Ut, fondé sur la simulation du système de particules (Xti, 1 ≤ i ≤ N) ; on approche la mesure initiale U0 par une combinaison linéaire de masses de Dirac, ce qui donne les positions initiales des particules, qu'on déplace en simulant une (et une seule) réalisation approchée du système (Xti, 1 ≤ i ≤ N), obtenue à l'aide d'une discrétisation en temps du système différentiel stochastique ci-dessus.

RA1994 sample page

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RA1995 sample page (latex2html)

Précédent : Méthodes probabilistes pour **Remonter :** Méthodes probabilistes pour **Suivant :** Simula

Méthodes particulaires stochastiques

Participants : Mireille Bossy, Denis Talay

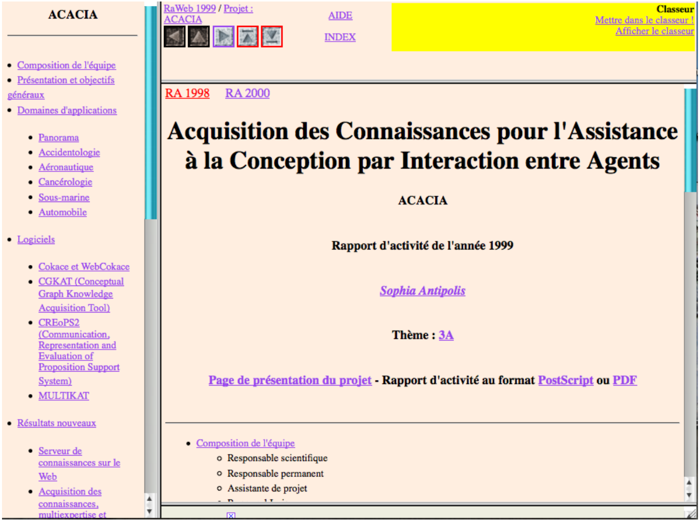
Nous poursuivons l'étude engagée sur ce sujet, aussi bien sur le plan de l'analyse théorique de la vites de l'implémentation numérique. On s'intéresse a la résolution d'équations aux dérivées partielles de ty

$$\begin{cases} \dfrac{\partial U_t}{\partial t} = \dfrac{1}{2}\dfrac{\partial^2}{\partial x^2}\left(U_t \displaystyle\int_{\mathbb{R}} s(x,y)U_t(dy)\right) - \dfrac{\partial}{\partial x}\left(U_t \displaystyle\int_{\mathbb{R}} b(x,y)U_t(dy)\right), \\ \qquad\qquad (x,t) \in \mathbb{R} \times [0,T], \\ U_{t=0} = U_0. \end{cases}$$

D'après les résultats de *propagation du chaos*, la solution U_t de cette équation s'interprète de façon pr particules en interaction dont la dynamique est décrite par des ``*noyaux d'interaction*'' $b(\cdot,\cdot)$, $s(\cdot,\cdot)$ et différentielles stochastiques :

$$\begin{cases} dX_t^i = \frac{1}{N}\sum_{j=1}^N b\left(X_t^i, X_t^j\right) dt + \frac{1}{N}\sum_{j=1}^N s\left(X_t^i, X_t^j\right) dw_t^i, \\ X_0^i = X_0^i, \quad i = 1, \ldots, N. \end{cases}$$

RA1999 Front page



RA1999 sample page

fonctionnelle F le long de chaque trajectoire simulée et enfin moyenner toutes les valeurs obtenues.

Donnons un exemple élémentaire. Considérons l'équation de la chaleur

$$\frac{\partial u}{\partial t}(t,x) = \nu\,\Delta u(t,x),\ \forall (t,x) \in]0,T] \times \mathbb{R}^d \qquad (2)$$

avec pour condition initiale $u(0,\cdot) = u_0(\cdot)$ une fonction mesurable bornée. Le paramètre ν est strictement positif, et est appelé « paramètre de viscosité » en mécanique des fluides ou « volatilité » en finance.

On vérifie facilement que la fonction

$$\forall (t,x) \in]0,T] \times \mathbb{R}^d,\ u(t,x) := \mathbb{E} u_0(x + \sqrt{2\nu} W_t)$$

... $\mathbb{R}^d$

Un processus stochastique est une famille de variables aléatoires sur un espace probabilisé $(\Omega, \mathcal{F}, \mathbb{P})$ indicées par le

RA 2009 sample page

Motivated by the Stochastic Downscaling Model (SDM) in meteorology and based on Lagrangian stochastic models (see Section 7.1), they constructed a Lagrangian system confined within a regular domain $\mathcal{D}$ of $\mathbb{R}^d$ and satisfying the mean no-permeability boundary condition:

$$\mathbb{E}\left((\mathfrak{U}_t \cdot n_{\mathcal{D}}(X_t)) \mid X_t = x\right) = 0 \text{ for } x \in \partial\mathcal{D}, \tag{2}$$

where $n_{\mathcal{D}}$ is the outward normal unit vector related to $\mathcal{D}$. This year, the problem of the existence of traces associated to (2) have been studied in the case $\mathcal{D} = \mathbb{R}^{d-1} \times (0, +\infty)$. Under suitable hypotheses, the distribution ρ_t(x, u) of the corresponding confined process $(X_t, \mathfrak{U}_t)$ has been shown to admit a strong trace $\gamma(\rho)$(t, x, u) for $x \in \partial\mathcal{D}$ satisfying the specular boundary condition

$$\gamma(\rho)(t, x, u) = \gamma(\rho)(t, x, u - 2(u \cdot n_{\mathcal{D}}(x))n_{\mathcal{D}}(x)) \text{ for } (t, x, u) \in (0, T) \times \partial\mathcal{D} \times \mathbb{R}^d. \tag{3}$$

Interacting particle systems in Lagrangian modeling and simulation of turbulent flows

alt field of images

Each non-trivial MathML formula is converted once
The “alt” field of the <img> is used if the image is absent.
Image 2 corresponds to $T \setminus K$. Image 12 is (P').

The study of Problem Im12 ${{()P^\#8242 {()}}$ has been recently car
where p= 2 (with ψ= 0) which encompasses all mixed problems whe
Im2 ${T\#8726 K}$ is greater than 2 [50] . It turns out that the solutior
and that the constraint is saturated pointwise, that is I gl = M a.e. on
unless fis the trace on Kof and H2 -function satisfying the constraint;
perhaps counter-intuitive. Although non-smooth, this infinite-dimensic
problem has a critical point equation and solves a min- max equation
multiplier is a function on Im2 ${T\#8726 K}$. The solution can be ex
the multiplier through a Toeplitz spectral equation as well as a Cauch
representation. More details on an algorithmic approach can be founc

Images or not?

- In 1994, no browsers rendered MathML
- Latex2html interprets math formulas, in some cases replaces only part of the formula by images.
- Tralics converts the whole formula into a MathML expression.
- A postprocessor tries to do the same job as latex2hml. Each image has an ALT field that summarizes the MathML.

Tralics : a LaTeX to XML translator

Written in C++
Free software, released under CeCILL
Current version 2.13.6
Code size : 57k lines, 1.7Mo
Classes and packages : 99
Test files : 35
Size of hashtable : 2300
Web set: http://www-sop.inria.fr/apics/tralics
Sources: ftp://ftp-sop.inria.fr/apics/tralics-src

Challenge 1

Challenge : convert the Ams test file. Problems:

```
1 Undefined command \@@italiccorr.
2 Undefined command \bysame
3 Undefined command \AmS.
4 \newcommand: Cannot define \st; token is already de
5 Undefined command \Hat.
6 \renewcommand: Cannot define \labelenumi; token is
7 Undefined command \hdotsfor.
8 bad hbox.
9 bad math env align*.
10 bad math env align.
11 Undefined environment alignat.
```

Challenge 2

Equations 7.22 and 3.17 wrong numbered
The theorem starts with an equation

Theorem 7.15 leads to

$$H_c = \frac{1}{n_1 + n_2} n_1 ! n_2 ! \delta_{n_1 n_2}. \tag{7.21}$$

Now, we consider an asymmetrical approach. Theorem 3.8 leads to

$$\begin{aligned} &\det \mathbf{K}(t = 1, t_1, \cdots, t_n; l|l) \\ &= \sum_{I \subseteq \mathbf{n}-\{l\}} (-1)^{|I|} \prod_{i \in I} t_i \prod_{j \in I} (D_j + \lambda_j t_j) \det \mathbf{A}^{(\lambda)}(\bar{I} \cup \{l\} | \bar{I} \cup \{l\}). \end{aligned} \tag{7}$$

By (2.3) and (3) we have the following asymmetrical result:

Theorem 7.23.

$$H_c = \frac{1}{2} \sum_{I \subseteq \mathbf{n}-\{l\}} (-1)^{|I|} \mathrm{per} \mathbf{A}^{(\lambda)}(I|I) \det \mathbf{A}^{(\lambda)}(\bar{I} \cup \{l\} | \bar{I} \cup \{l\}) \tag{7.24}$$

which reduces to Goulden–Jackson's formula when $\lambda_i = 0, i = 1, \cdots, n$ [10].

Challenge 3

8.2. “Poor man´s bold” If a bold version of a particular symbol doesn´t exist in the available fonts, then `\boldsymbol` can´t be used to make that symbol bold. At the present time, this means that `\boldsymbol` can´t be used with symbols from the `msam` and `msbm` fonts, among others. In some cases, poor man´s bold (`\pmb`) can be used instead of `\boldsymbol`:

$$\frac{\partial x}{\partial y}\bigg\vert\frac{\partial y}{\partial z}$$

```
\[\frac{\partial x}{\partial y}
\pmb{\bigg\vert}
\frac{\partial y}{\partial z}\]
```

So-called “large operator” symbols such as $\sum$ and $\prod$ require an additional command, `\mathop`, to produce proper spacing and limits when `\pmb` is used. For further details see *The TeXbook*.

$$\sum_{\substack{i<B\\ i \text{ odd}}} \prod_\varkappa \varkappa F(r_i) \qquad \sum_{\substack{i<B\\ i \text{ odd}}} \prod_\varkappa \varkappa(r_i)$$

```
\[\sum_{\substack{i<B\\\text{$i$ odd}}}
\prod_\kappa \kappa F(r_i)\qquad
\mathop{\pmb{\sum}}_{\substack{i<B\\\text{$i$ odd}}}
\mathop{\pmb{\prod}}_\kappa \kappa(r_i)
\]
```

9. Compound symbols and other features

9.1. Multiple integral signs `\iint`, `\iiint`, and `\iiiint` give multiple integral signs with the spacing between them nicely adjusted, in both text and display style. `\idotsint` gives two integral signs with dots between them.

Challenge 4; why these *proof*?

Proof. We choose $\psi_0(z)$ to be a radial function depending only on $r = |z|$. Let $h(r) \geq 0$ be a suitable smooth function satisfying $h(r) \geq c_3$ for $1{-}2a < |z| < 1{-}a$, and $h(r) = 0$ for $|z| > 1-\frac{a}{2}$. The radial Laplacian

$$\Delta_0 \ln\psi_0(r) = \left(\frac{d^2}{dr^2} + \frac{1}{r}\frac{d}{dr}\right)\ln\psi_0(r)$$

has smooth coefficients for $r > 1{-}2a$. Therefore, we may apply the existence and uniqueness theory for ordinary differential equations. Simply let $\ln\psi_0(r)$ be the solution of the differential equation

$$\left(\frac{d^2}{dr^2} + \frac{1}{r}\frac{d}{dr}\right)\ln\psi_0(r) = h(r)$$

with initial conditions given by $\ln\psi_0(1) = 0$ and $\ln\psi_0'(1) = 0$.

Next, let D_ν be a finite collection of pairwise disjoint disks, all of which are contained in the unit disk centered at the origin in C. We assume that $D_\nu = \{z \mid |z{-}z_\nu| < \delta\}$. Suppose that $D_\nu(a)$ denotes the smaller concentric disk $D_\nu(a) = \{z \mid |z{-}z_\nu| \leq (1{-}2a)\delta\}$. We define a smooth weight function $\Phi_0(z)$ for $z \in C - \cup_\nu D_\nu(a)$ by setting $\Phi_0(z) = 1$ when $z \notin \cup_\nu D_\nu$ and $\Phi_0(z) = \psi_0((z{-}z_\nu)/\delta)$ when z is an element of D_ν. It follows from Lemma 6.1 that Φ_0 satisfies the properties:

1. *Proof*. $\Phi_0(z)$ is bounded above and below by positive constants $c_1 \leq \Phi_0(z) \leq c_2$.
2. *Proof*. $\Delta_0 \ln\Phi_0 \geq 0$ for all $z \in C - \cup_\nu D_\nu(a)$, the domain where the function Φ_0 is defined.
3. *Proof*. $\Delta_0 \ln\Phi_0 \geq c_3\delta^{-2}$ when $(1{-}2a)\delta < |z{-}z_\nu| < (1{-}a)\delta$.

Example of text

```
% Tralics configuration file 'test0.tcf'
\ChangeElementName{theorem}{Theorem}
\newtheorem{theo}[subsection]{Theorem}

\begin{module}{fondements}{desc}{\'Etude du problème}
 \begin{participants}
   \persB{Jean}{Dupond}[Lyon]{Chercheur}{CNRS}[Détach
 \end{participants}
 L'équation \eqref{A} de \cite{E}
  \begin{theo}\begin{equation}
    e=mc^2 \label{A}\end{equation}
 \end{theo}
\end{module}
```

XML translation by Tralics

```
<!DOCTYPE unknown SYSTEM 'unknown.dtd'>
<fondements id-text='fondements' id='uid1'>
 <module id-text='1' id='uid2'><head>Étude du problème</he
  <participants>
    <pers prenom='Jean' nom='Dupond' affiliation='cnrs'
       profession='Research' hdr='y'>Détaché</pers>
  </participants>
  <p>L'équation (<ref target='uid4'/>) de
      <cit><ref target='bid0'/></cit></p>
  <Theorem style='plain' type='theo' id-text='1' id='uid3'
    <head>Theorem</head>
    <p/>
    <formula id-text='1' id='uid4' type='display'>
      <math mode='display' xmlns='...'>
        <mrow> <mi>e</mi> <mo>=</mo> <mi>m</mi>
            <msup><mi>c</mi> <mn>2</mn> </msup></mrow></mat
    </formula>
  </Theorem>
```

Conversion to HTML

Uses XSLT (xsltproc Linux or Mac)
A valid DTD is needed (for the id)
Main style sheet for split into pages
A style sheet for metadata
A generic style sheet
For the example: ex1html.xsl + clsb.xsl + amsart.xsl
For the raweb: 45 style sheets (17k lines)

HTML Translation

```
<p>L´équation (<a href="#uid6">2</a>) de
  <a href="#bid0" title="Einstein1989">[1]</a></p>
<div class="theorem-theo">
<i><p><a style="..." id="uid5">Theorem 1.1.  </a></p>
<div class="mathdisplay">
<table width="100%" id="uid6">
    <tr valign="middle"><td class="leqno"></td>
    <td><math mode="display">...</math></td>
    <td
class="eqno">(2)</td></tr></table></div></i></div>
<h1 id="bibliography">Bibliography</h1>
<p class="noindent nofirst" id="bid0">[1]
    <span class="smallcap">Albert Einstein.</span>
  <i>The collected papers of Albert Einstein...</i>
  Princeton, NJ, 1989.</p>
```

Style sheet 1

```
.proof p:first-child:before {font-style:italic; content :
samp { color: maroon;}
<xsl:template match="latexcode"><samp><xsl:apply-templates
<xsl:template match="head"/>
<xsl:template match="div0" mode="normal">
  <h1 style="text-align:center"> ....  </h1>
  <xsl:apply-templates/></xsl:template>
<xsl:template match="div1"><xsl:apply-templates/></xsl:tem
<xsl:template match="div1" mode="first-par"><a style="..."
    ...<xsl:apply-templates select="head"
mode="full"/>...
<xsl:template match="p">
  <xsl:choose>
   <xsl:when test="parent::pre"> <xsl:apply-templates/> </
   <xsl:when test="parent::div1 and position()=2"> ... </x
   <xsl:when test="parent::theorem and position()=2"> ...
   <xsl:when test="parent::theorem and position()=3
                 and preceding-sibling::alt_head[1]">
     <p><xsl:apply-templates select=".." mode="first-par"/
```

Style sheet 2

```
<xsl:template match="theorem">
  <div class='theorem-@type'><i> <xsl:apply-templates/></i
<xsl:template match="theorem" mode="first-par">
    <a style="font-weight: bold;font-style:normal;">
      <xsl:call-template name="id"/>
      <xsl:apply-templates select="head" mode="full"/>
      <xsl:call-template name="calculateTheoremNumber"/>
      <xsl:apply-templates select="alt_head" mode="text"/>
</xsl:template>
<xsl:template match="theorem/alt_head" mode="text">
  <span style="font-weight: normal">
    (<xsl:apply-templates/>)
  </span></xsl:template>
```

ZB example 1

Zbl 1058.41008
Baratchart, Laurent; **Grimm, José**; **Leblond, Juliette**; **Partington, Jonathan R.**
Asymptotic estimates for interpolation and constrained approximation in H^2 by diagonalization of Toeplitz operators. (English)
Integral Equations Oper. Theory 45, No. 3, 269-299 (2003).

Let $\mathbb{D}$ be the unit disk, $\mathbb{T}$ be the unit circle in the complex plane, and let $\mathbb{T} = I \cup J$, where I and J are two disjoint circles

$$I = (e^{-ia}, e^{ia}), \quad J = [e^{ia}, e^{i(2\pi - a)}], \quad 0 < a < \pi \cdot$$

It is well known that the Hardy space $H^2 = H^2(\mathbb{D})$ consists of all functions in $L^2(\mathbb{T})$ whose Fourier coefficients of strictly negative index are equal to zero. These functions have a Poisson extension in $\mathbb{D}$ that is holomorphic. One can recover the function from its extension by taking non-tangential limits on $\mathbb{T}$ (these limits exist a.e. on $\mathbb{T}$). So, the authors consider H^2 both as a subset of $L^2(\mathbb{T})$ and as a Hilbert space of holomorphic functions on $\mathbb{D}$.

The main purpose of the article is to investigate the following bounded extremal problem:

For given $f \in L^2(I)$, $\Psi \in L^2(J)$, and $M > 0$, find a function $g = g_\Psi \in H^2$ to minimize $\|f - g\|_{L^2(I)}$ under the constraint $\|\Psi - g\|_{L^2(J)} \leq M$.

ZB example 2

Zbl 1094.65070
Grimm, V.; Quispel, G.R.W.
Geometric integration methods that preserve Lyapunov functions. (English)
BIT 45, No. 4, 709-723 (2005).

Some projection Runge-Kutta methods that preserve Lyapunov type functions of ordinary differential systems are proposed. Assuming that the differential system $y'(t) = f(y(t))$, (1) has a smooth scalar Lyapunov function $V(y)$ which is non increasing along the solutions of (1) in a certain region of the y-space and ψ_h is a Runge-Kutta method with order p defined by the Butcher array $(A = (a_{ij}), b = (b_j))$ with non negative weights b_j, the authors propose an algorithm $\tilde{\psi}_h = P \cdot \psi_h$ which projects orthogonally the numerical solution $\psi_h(y_n)$ into the manifold $V(y) = V_{n+1}$ where V_{n+1} is some approximation to the Lyapunov function at $y(t_{n+1})$.

It is proved that this projection retains the order of the original method and the equilibrium points of the system coicide with the fixed points of the numerical method. Further some symmetric projection methods are also proposed. Finally, the paper presents some numerical experiments testing the behaviour of Euler, Heun and two-stage Gauss methods for some nonlinear planar problems, concluding that for these problems the preservation of some Lyapunov functions improves the qualitative phase space produced by the numerical methods over the standard approach.

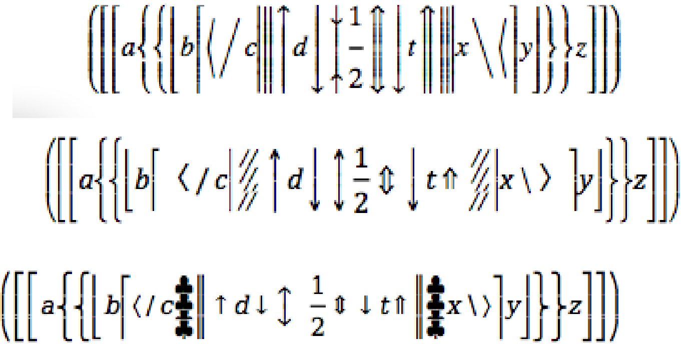
Reviewer: Manuel Calvo (Zaragoza)

Roots (Firefox 2007 & 2010)

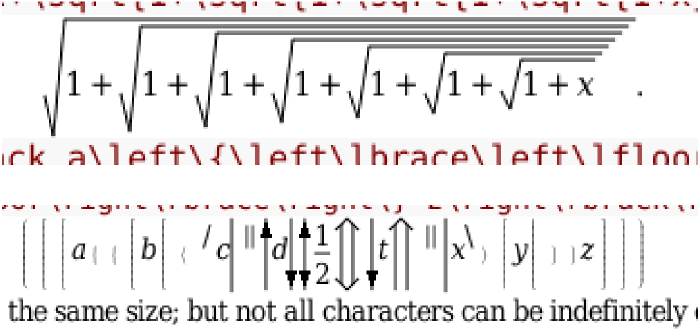
$$\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+x}}}}}}}$$

$$\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+x}}}}}}}.$$

Delimiters (Firefox)



Amaya



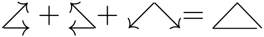
Opera

$$\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+\sqrt{1+x}}}}}}}\,.$$

$$\sum_{\substack{1\leq i\leq n\\ 1\leq j\leq q\\ 1\leq k\leq r}} a_{ij}b_{jk}c_{ki}$$

$$([[a]])$$

A funny formula

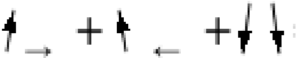


```
$\lower .97ex \hbox{$\rightarrow$}
 \mskip-24mu \nearrow + \nwarrow
  \mskip-24mu \lower .97ex \hbox{$\leftarrow$} +
  \swarrow \mskip-2mu
\searrow = \hbox{$\diagup\mskip-1mu\diagdown$}
\lower.48ex\hbox{$\mskip-31mu\hbox to
  5.85mm{\strut\hrulefill\strut}$}$
```

A funny formula

Best rendering by Firefox :

Same HTML, rendered by Amaya



Source: Zbl 1185.05007

Conclusion

Thank you!