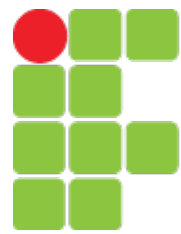


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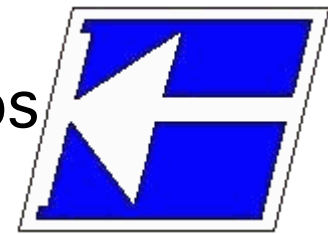


INSTITUTO FEDERAL
SANTA CATARINA

Departamento Acadêmico de Eletrônica

Pós-Graduação em Desen. de Produtos Eletrônicos

Conversores Estáticos e Fontes Chaveadas



Metodologia de Projeto de Retificadores

Prof. Clovis Antonio Petry.

Prof. Joabel Moia.

Florianópolis, março de 2014.

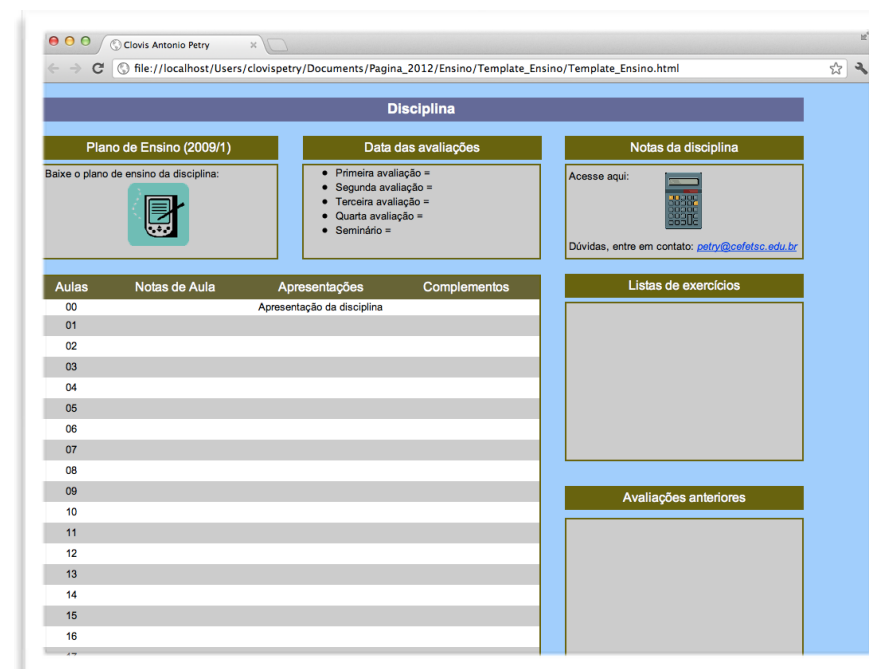
Biografia para Esta Aula

Conversores ca-cc:

- Metodologia de projeto de retificadores.



www.ProfessorPettry.com.br



Nesta Aula

Conversores ca-cc:

- Introdução;
- Metodologias de projeto;
- Softwares para projeto de retificadores;
- Exemplo de projeto.

Introdução

Projeto de retificadores:

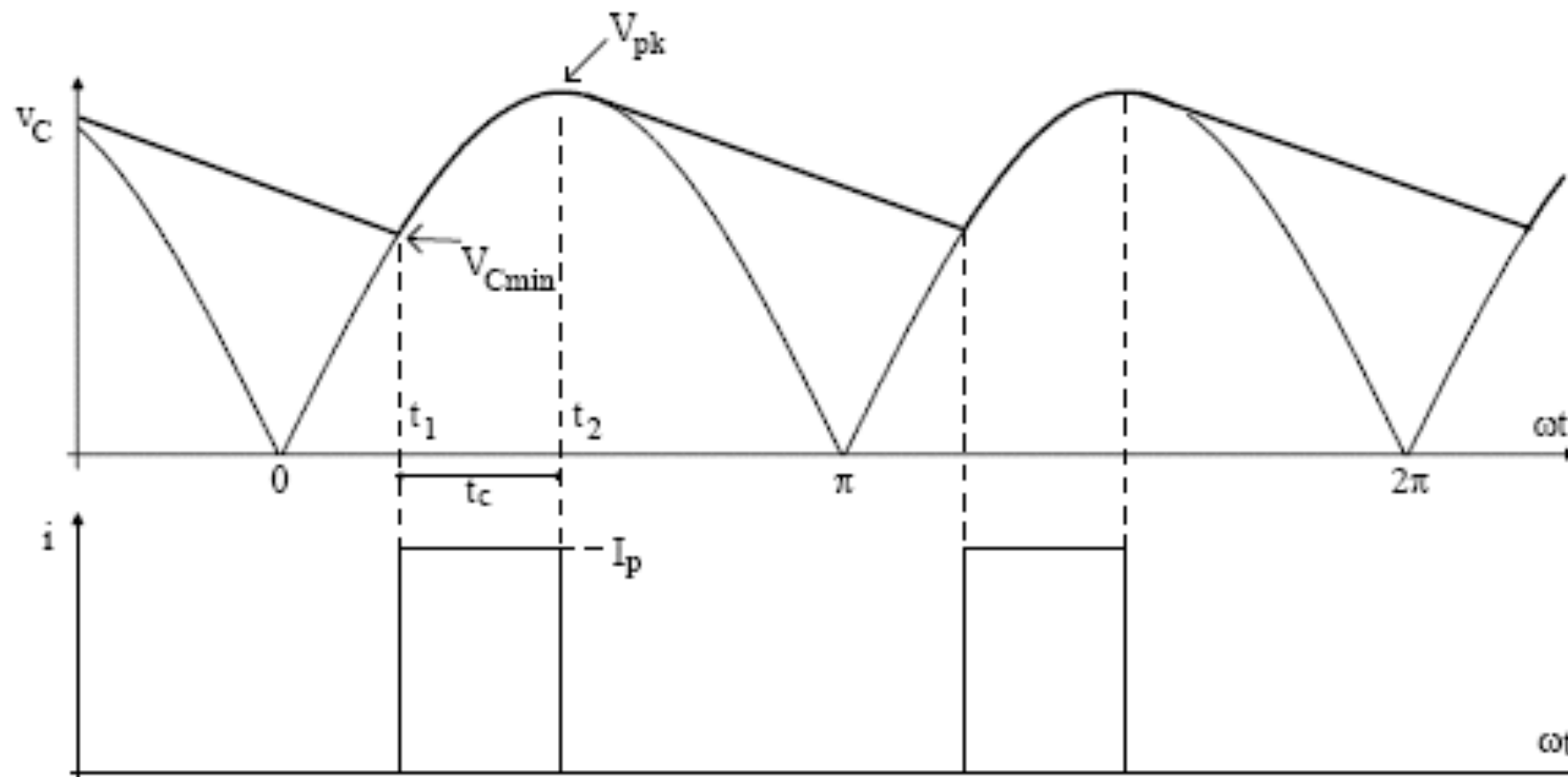
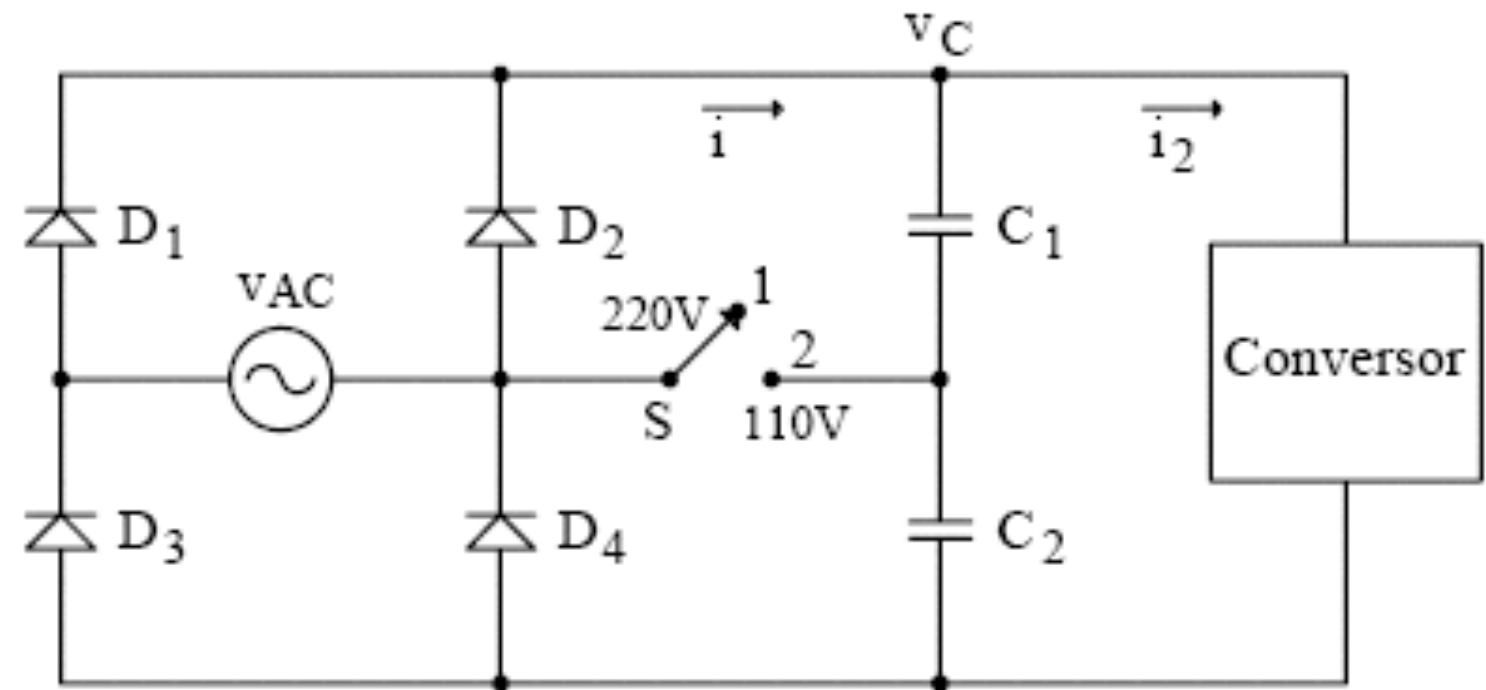
- Análise complexa dos circuitos envolvidos;
- Aproximações necessárias;
- Resultados obtidos;
- Tempo envolvido;
- Simplicidade versus resultados.

Metodologias de Projeto de Retificadores

Análise simplificada:

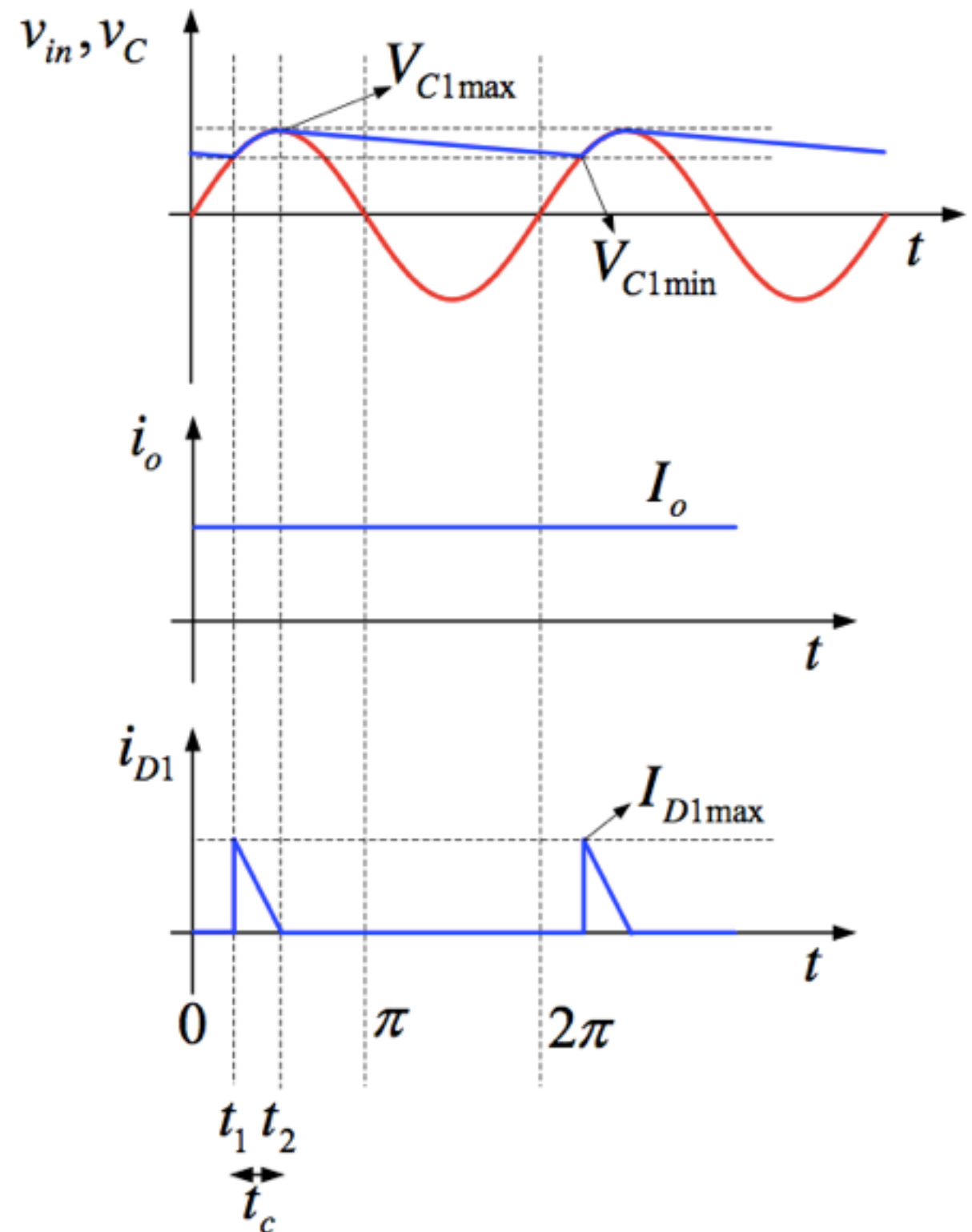
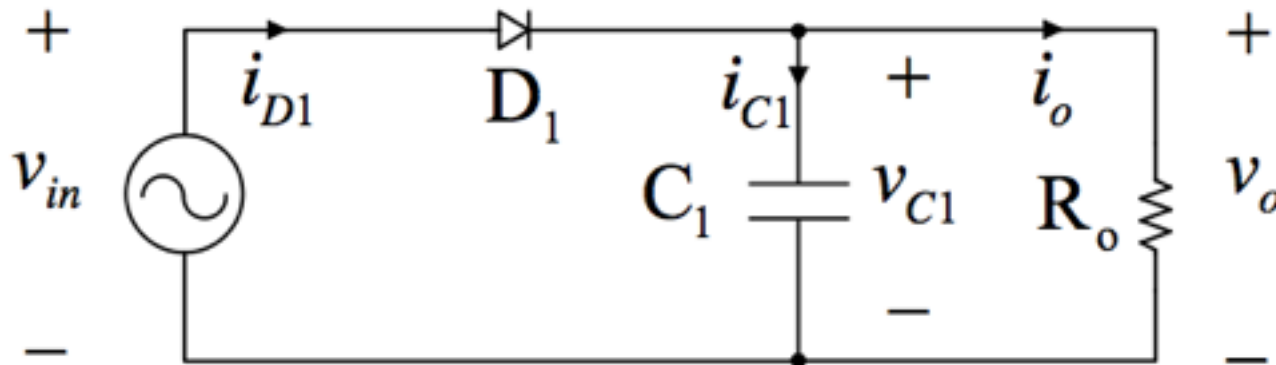
Problemas:

- Corrente de pico;
- Corrente média;
- Corrente eficaz.



Metodologias de Projeto de Retificadores

Análise simplificada:



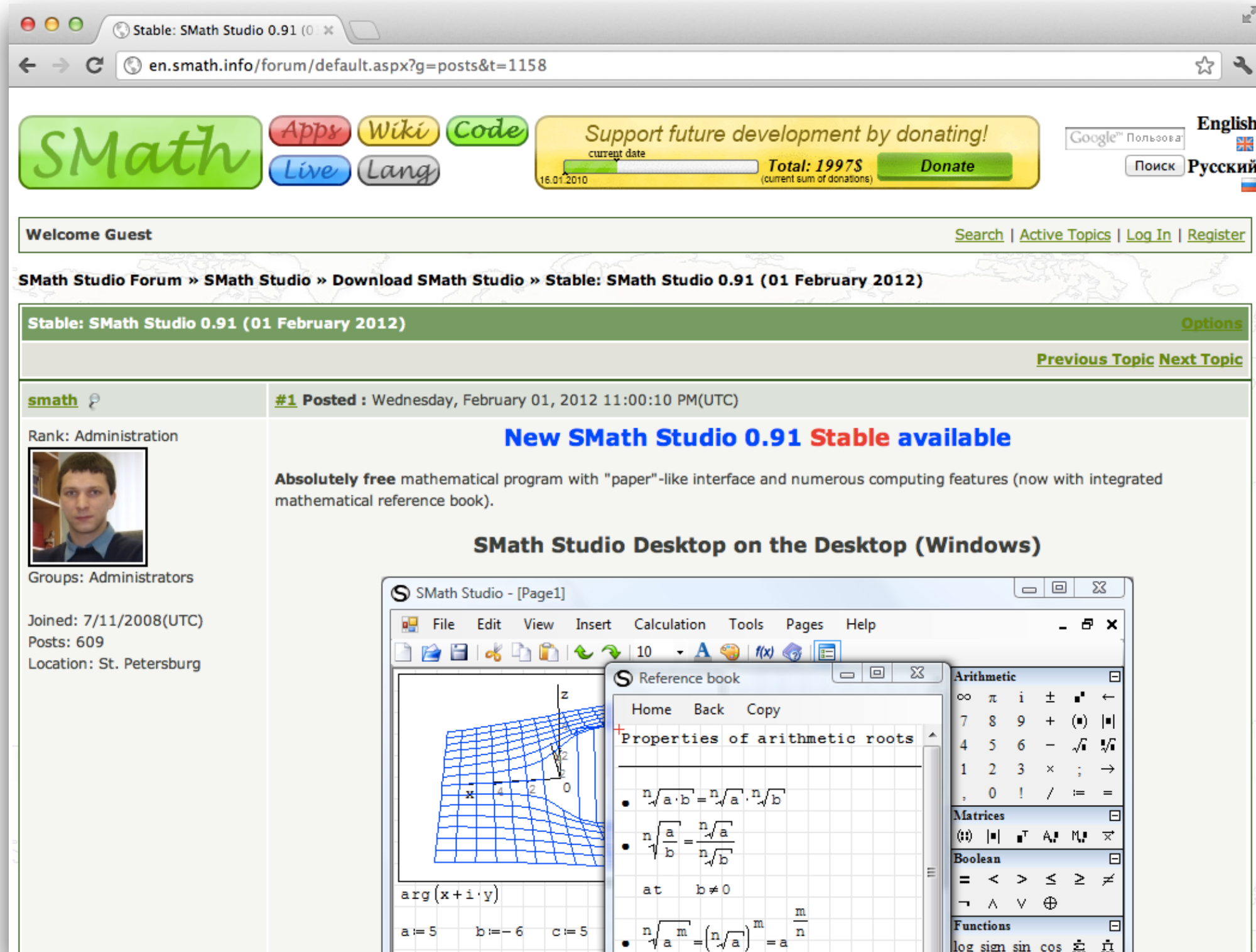
Metodologias de Projeto de Retificadores

Análise simplificada, resultados:

Variável	Calculado	Simulado	Erro(%)
V_{C1max}	311,00 V	311,00 V	0,00
ΔV_{C1}	31,1 V	28,89 V	-7,66
V_{C1min}	279,9 V	282,08 V	0,77
t_c	1,436 ms	1,434 ms	0,3
V_{C1med}	295,45 V	298,06 V	0,88
I_o	0,338 A	0,339 A	0,28
I_{D1max}	9,43 A	9,26 A	-1,82
I_{D1med}	0,338 A	0,338 A	0,00
I_{D1ef}	1,459 A	1,454 A	-0,33
I_{C1ef}	1,419 A	1,414 A	-0,36
$P_o=P_f$	100 W	100,44 W	0,44
S_f	320,70 VA	319,85 VA	-0,29
FP	0,312	0,314	0,72

Softwares para Projeto de Retificadores

<http://en.smath.info/forum>



The screenshot shows a web browser window displaying the SMATH Studio forum. The browser's address bar shows the URL `en.smath.info/forum/default.aspx?g=posts&t=1158`. The forum page has a header with the SMATH logo, navigation links (Apps, Wiki, Code, Live, Lang), a donation banner, and language options (English, Русский). The main content area shows a forum post titled "New SMATH Studio 0.91 Stable available" by a user named "smath". The post includes a description of the software as a free mathematical program with a "paper"-like interface and a reference book. Below the text is a screenshot of the SMATH Studio desktop application, which features a 3D plot, a reference book window, and a calculator window.

Stable: SMATH Studio 0.91 (01 February 2012)

Options

Previous Topic Next Topic

#1 Posted : Wednesday, February 01, 2012 11:00:10 PM(UTC)

New SMATH Studio 0.91 Stable available

Absolutely free mathematical program with "paper"-like interface and numerous computing features (now with integrated mathematical reference book).

SMATH Studio Desktop on the Desktop (Windows)

SMATH Studio - [Page1]

File Edit View Insert Calculation Tools Pages Help

Reference book

Home Back Copy

Properties of arithmetic roots

- $\sqrt[n]{a \cdot b} = \sqrt[n]{a} \cdot \sqrt[n]{b}$
- $\sqrt[n]{\frac{a}{b}} = \frac{\sqrt[n]{a}}{\sqrt[n]{b}}$
- at $b \neq 0$
- $\sqrt[n]{a^m} = (\sqrt[n]{a})^m = a^{\frac{m}{n}}$

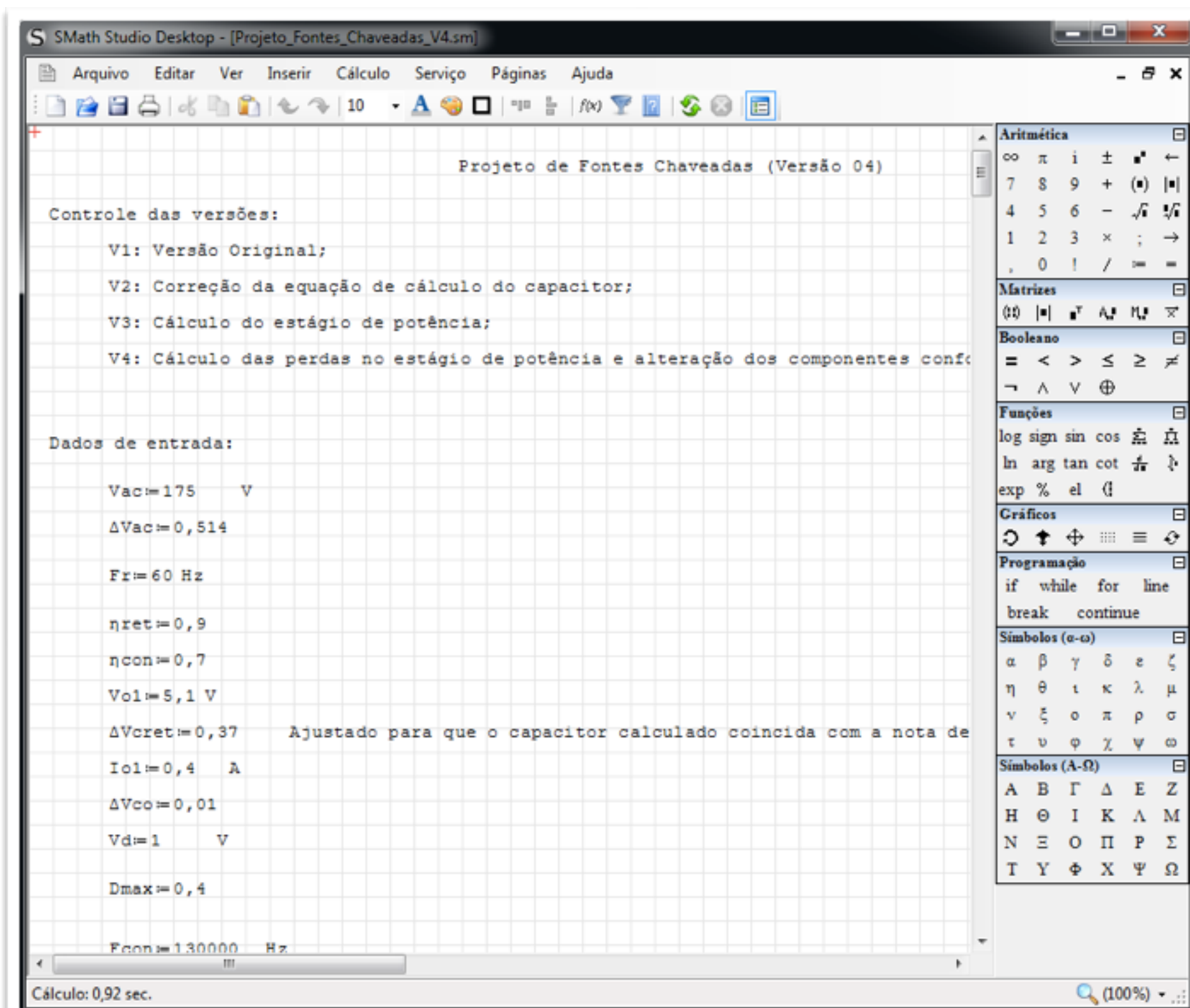
Arithmetic

Matrices

Boolean

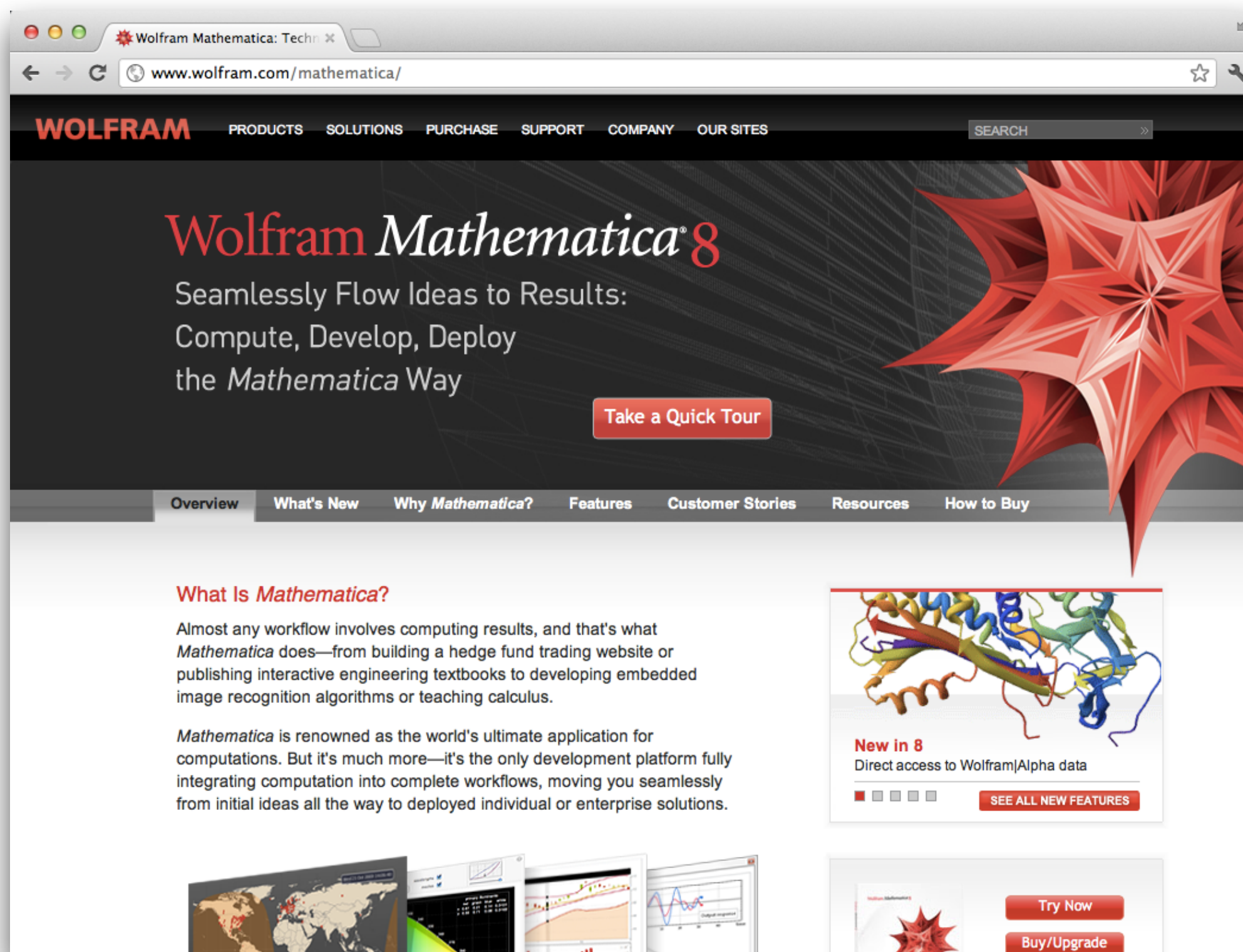
Functions

Softwares para Projeto de Retificadores



Softwares para Projeto de Retificadores

www.wolfram.com



The screenshot shows the Wolfram Mathematica website homepage. The browser window has a single tab titled "Wolfram Mathematica: Techn..." and the address bar shows "www.wolfram.com/mathematica/". The website features a dark header with the "WOLFRAM" logo and navigation links: PRODUCTS, SOLUTIONS, PURCHASE, SUPPORT, COMPANY, and OUR SITES. A search bar is located on the right. The main content area has a large, stylized red star graphic on the right. The text "Wolfram Mathematica® 8" is prominently displayed, followed by the tagline "Seamlessly Flow Ideas to Results: Compute, Develop, Deploy the Mathematica Way". A red button labeled "Take a Quick Tour" is positioned below the tagline. Below this, a horizontal navigation bar includes links: Overview, What's New, Why Mathematica?, Features, Customer Stories, Resources, and How to Buy. The "What's New" section is active, showing the heading "What Is Mathematica?" and two paragraphs of text. To the right, a section titled "New in 8" highlights "Direct access to Wolfram|Alpha data" with a button "SEE ALL NEW FEATURES". At the bottom, there are several small images showing various Mathematica outputs, including a world map, a bar chart, and a line graph, along with "Try Now" and "Buy/Upgrade" buttons.

WOLFRAM PRODUCTS SOLUTIONS PURCHASE SUPPORT COMPANY OUR SITES SEARCH

Wolfram Mathematica® 8

Seamlessly Flow Ideas to Results:
Compute, Develop, Deploy
the *Mathematica* Way

Take a Quick Tour

Overview What's New Why Mathematica? Features Customer Stories Resources How to Buy

What Is Mathematica?

Almost any workflow involves computing results, and that's what *Mathematica* does—from building a hedge fund trading website or publishing interactive engineering textbooks to developing embedded image recognition algorithms or teaching calculus.

Mathematica is renowned as the world's ultimate application for computations. But it's much more—it's the only development platform fully integrating computation into complete workflows, moving you seamlessly from initial ideas all the way to deployed individual or enterprise solutions.

New in 8

Direct access to Wolfram|Alpha data

SEE ALL NEW FEATURES

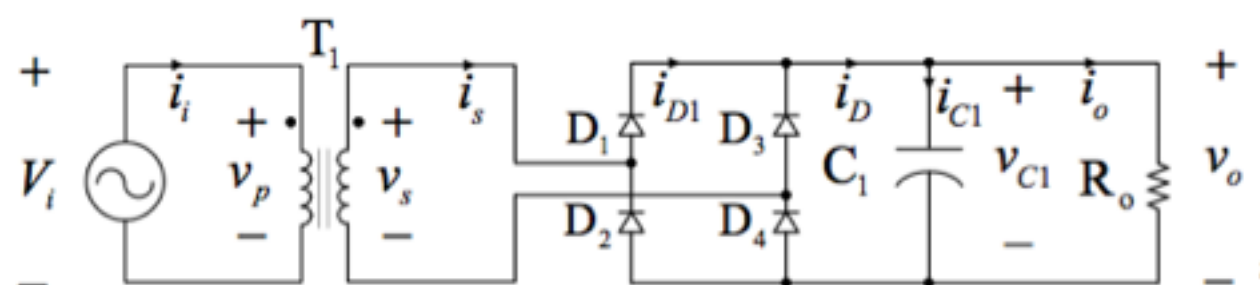
Try Now
Buy/Upgrade

Retificador Monofásico de Onda Completa - Baixa Tensão

Instituto Federal de Educação, Ciência e Tecnologia de Santa Catarina - IFSC
Campus Florianópolis - Departamento Acadêmico de Eletrônica
Prof. Clovis Antonio Petry

Esquemático do retificador

(*O esquemático do retificador monofásico de onda completa com a identificação das variáveis principais está mostrado abaixo*)



(*As principais formas de onda com a identificação das variáveis estão mostradas as seguir*)

v_s, v_{C1}

100%

Exemplos:

Exemplo:

Projetar os elementos de um retificador para 220 V, com potência de 10 W, frequência de 60 Hz, ondulação de tensão de 20%, rendimento de 90%, tensão de saída de 12 V.

Determinar:

- A. O circuito a ser empregado;
- B. O capacitor a ser utilizado;
- C. Os diodos do retificador;
- D. O transformador utilizado.



Próxima Aula

Conversores cc-cc:

- Conversores cc-cc não-isolados.

