



SINA PAD

ANTÔNIO TADEU GOMES

LNCC

COMPUTAÇÃO DE ALTO
DESEMPENHO E O SDUMONT:
APLICAÇÕES,
POTENCIALIDADES E DESAFIOS

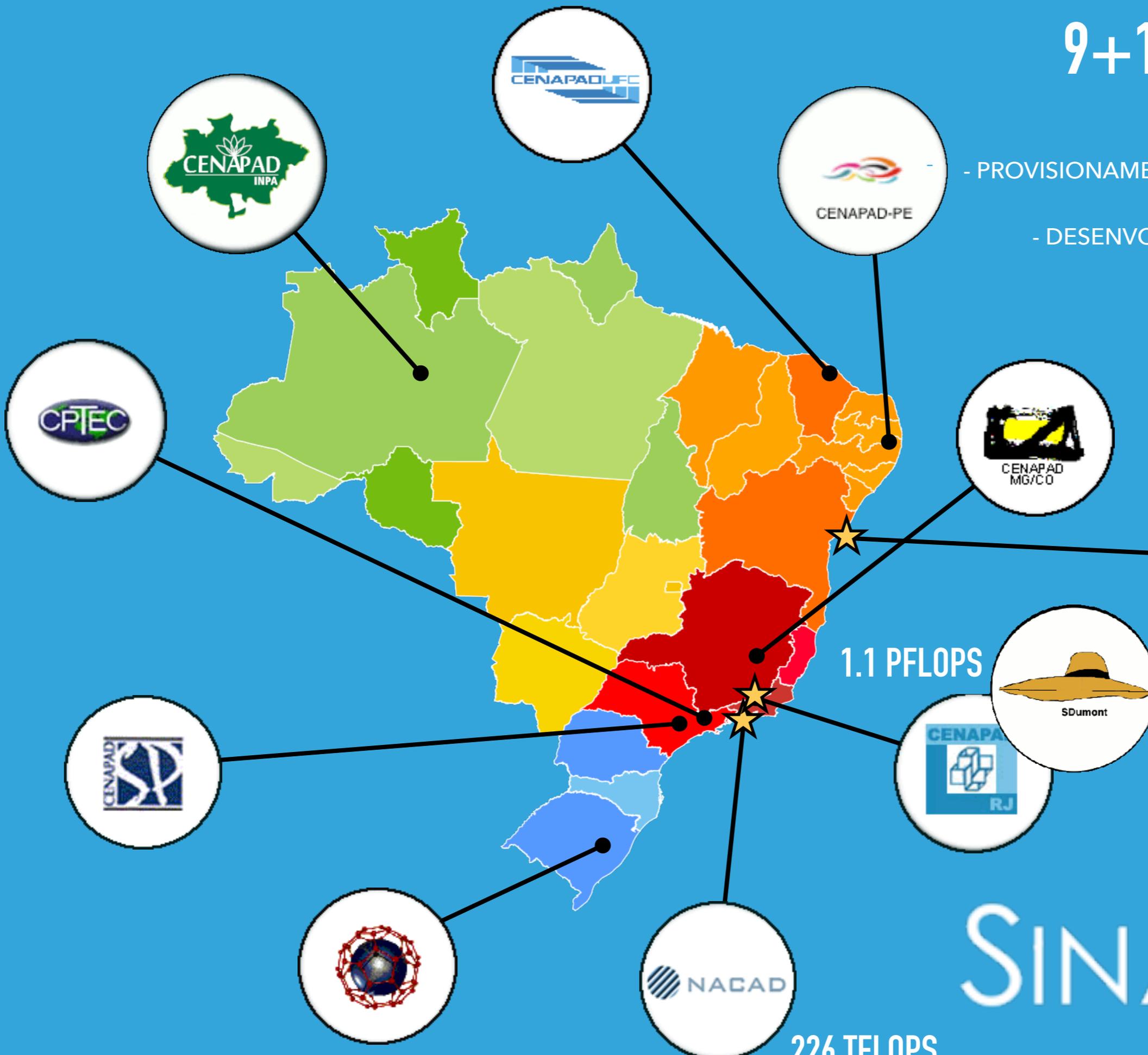


9+1 CENTROS

- PROVISIONAMENTO DE INFRAESTRUTURA

- DESENVOLVIMENTO (P.EX. PORTAIS)

- TREINAMENTO



SENAI CIMATEC

400 TFLOPS

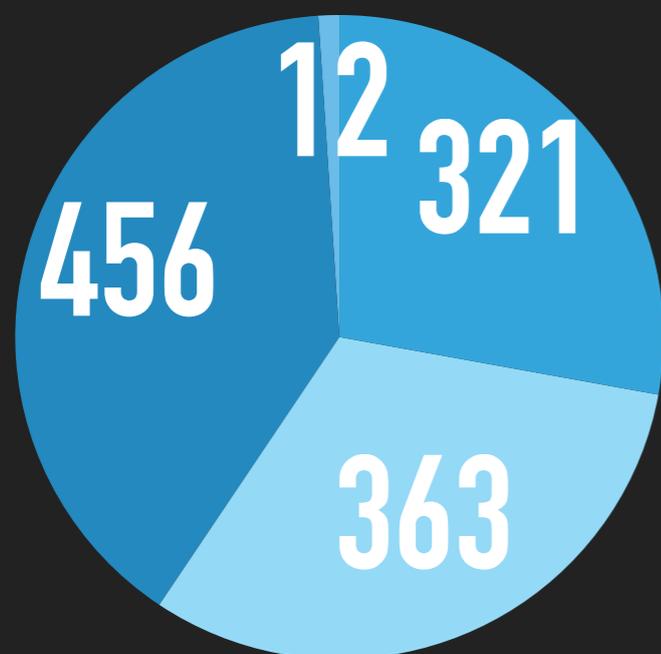
1.1 PFLOPS

226 TFLOPS

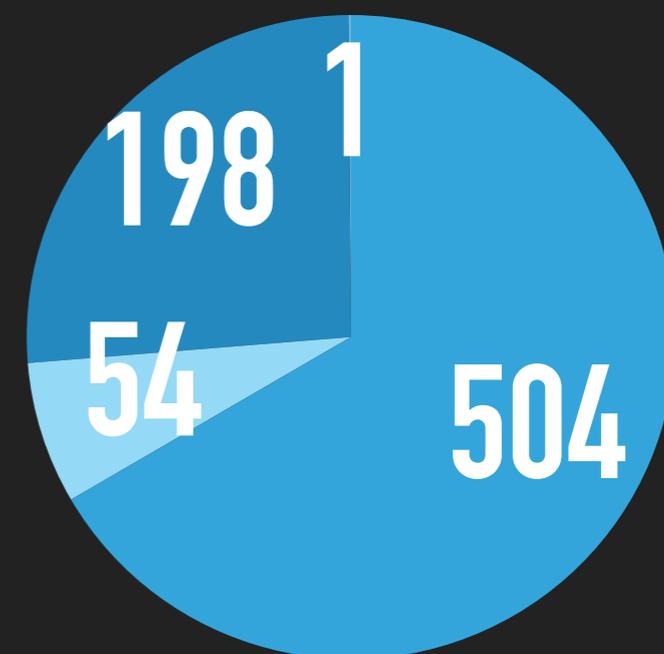
SINA PAD

CONFIGURAÇÃO

- ▶ ~1.1 PFlops
- ▶ 756 nós com configurações variadas: CPUs, GPGPUs, MICs, SHMEM
- ▶ ~1.7 PBytes storage Lustre; rede Infiniband
- ▶ SO Linux; gerente de recursos Slurm



- B710 CPU
- B715 CPU+MIC
- B715 CPU+GPGPU
- Mesca2



4 CHAMADAS ABERTAS

(PROJETOS DA PRIMEIRA CHAMADA ENCERRADOS EM 2018;
PROJETOS DA 4A CHAMADA COMEÇANDO ESTE ANO)

110+ PROJETOS IMPLEMENTADOS (REVISÃO POR PARES)

800+ USUÁRIOS

320.000+ EXPERIMENTOS E

350.000.000+ HORAS DE COMPUTAÇÃO DESDE AGO/2016

330+ TERABYTES ARMAZENADOS

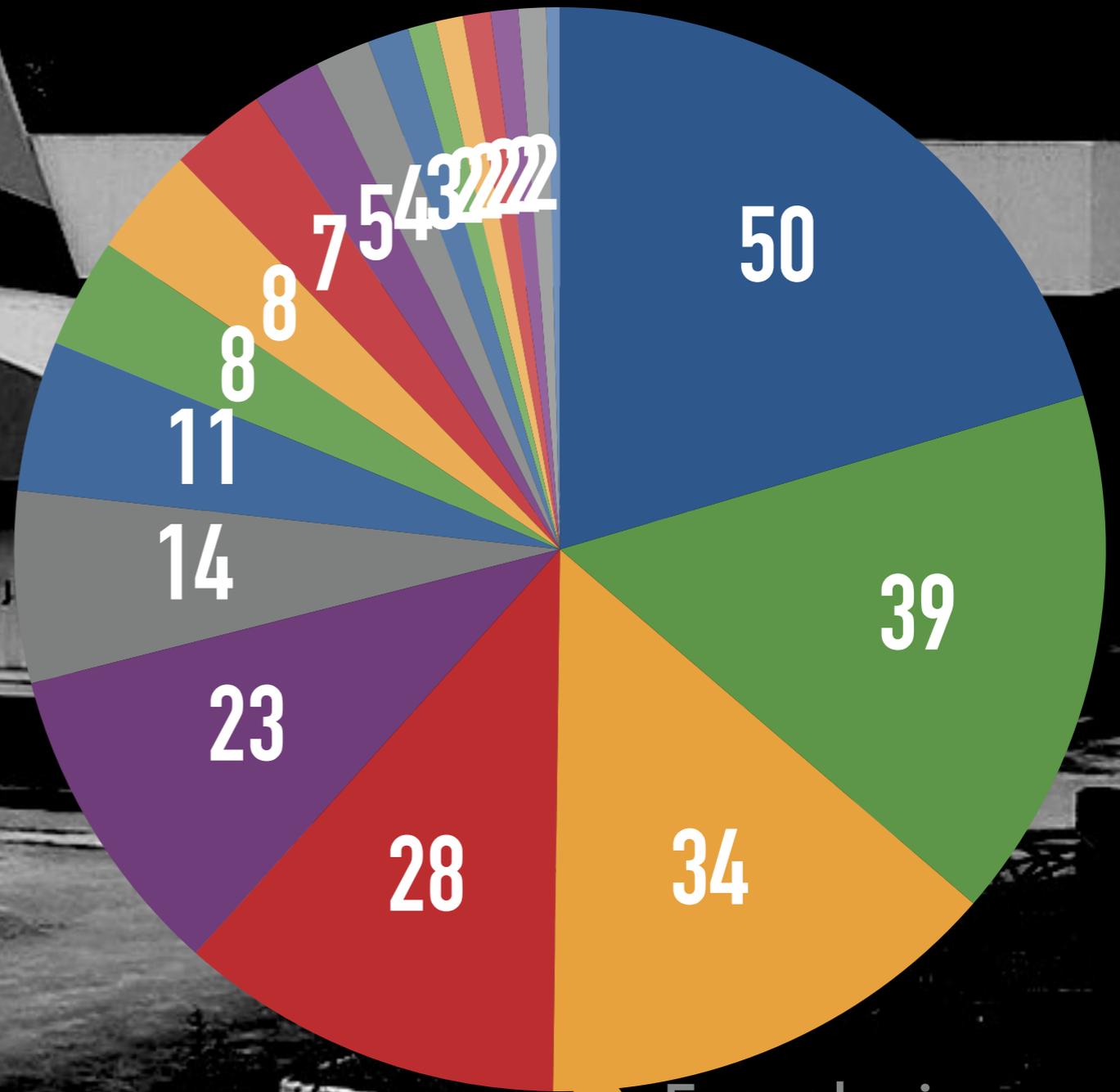
170+ ARTIGOS EM PERIÓDICOS INDEXADOS

3 PATENTES

19 FERRAMENTAS COMPUTACIONAIS

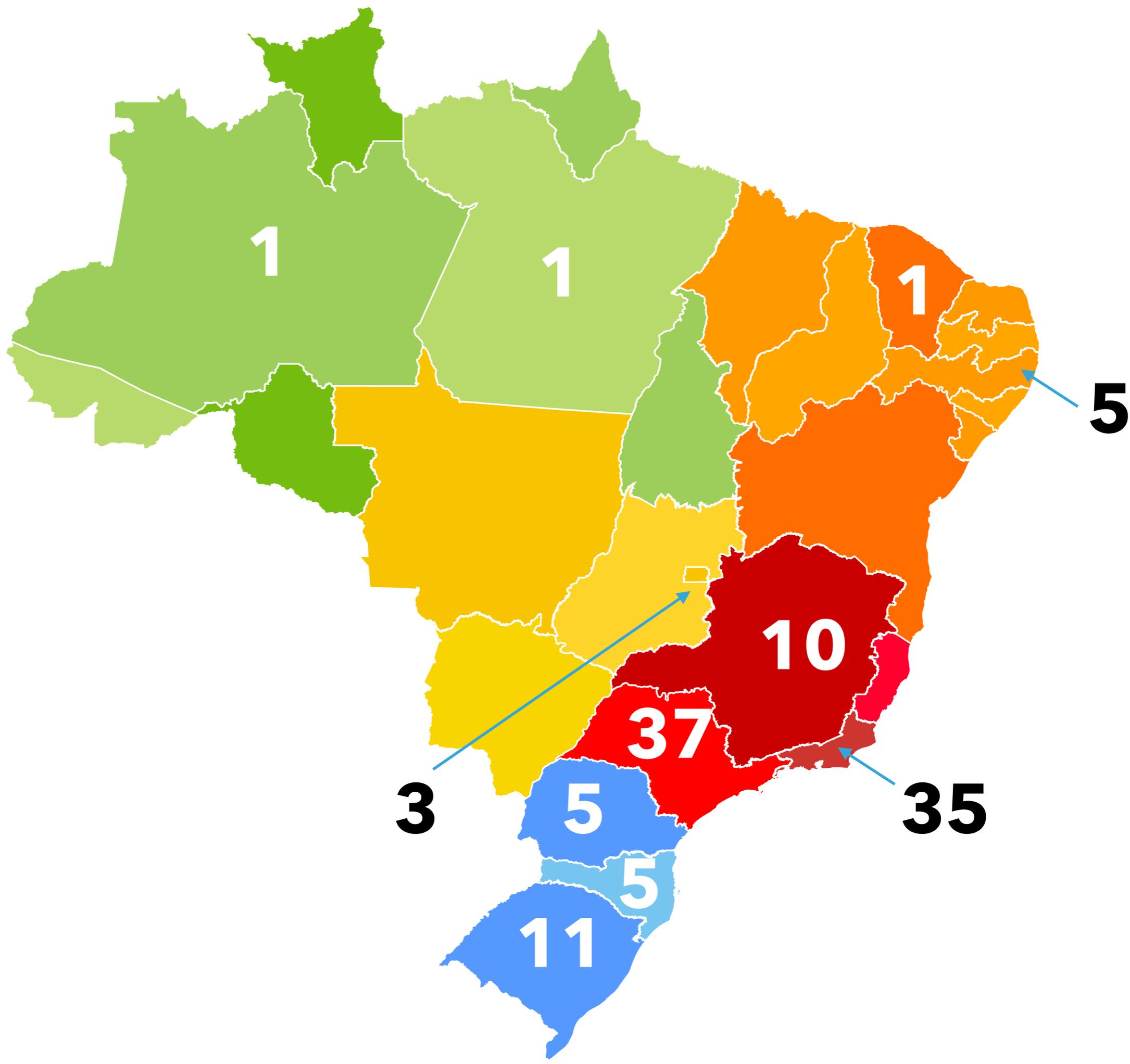
1 MARCA REGISTRADA

19 ÁREAS



- Química
- Ciências biol.
- Geociências
- Clima/tempo
- Estatística
- Linguística
- Ciências humanas
- Física
- Ciência da comp.
- Astronomia
- Ciência dos materiais
- Oceanografia
- Economia
- Engenharias
- Ciências da saúde
- Matemática
- Biodiversity
- Farmácia
- Ciências agrárias

+110 PROJETOS NO SDUMONT



**PROMOVENDO SINERGIAS:
OS CASOS DA SAÚDE E DE
NOVOS MATERIAIS**

SHARE REPORT



0

Chiromagnetic nanoparticles and gels

Jihyeon Yeom^{1,2}, Uallisson S. Santos³, Mahshid Chekini^{2,4}, Minjeong Cha^{2,5}, André F. de Moura^{3,*}, Nicholas A. Kotov^{1,2,4,5,6,*}

+ See all authors and affiliations

Science 19 Jan 2018:
Vol. 359, Issue 6373, pp 309-314
DOI: 10.1126/science.aao7172

Article

Figures & Data

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Boosting chiral nanoparticle responses

Optical nanomaterials that combine chirality and magnetism are useful for magneto-optics and as chiral catalysts. Although chiral inorganic nanostructures can exhibit high circular dichroism, modulating this optical activity has usually required irreversible chemical modification. Yeom *et al.* synthesized paramagnetic cobalt oxide (Co₃O₄) nanoparticles with chiral cysteine surface ligands. These ligands created chiral distortions of the crystal lattice, and this anisotropy led to much stronger chiroptical activity. The circular dichroism in the ultraviolet of nanoparticle gels could be modulated with magnetic fields.

Science, this issue p. 309

Abstract

Chiral inorganic nanostructures have high circular dichroism, but real-time modulation of optical activity has so far been achieved only by irreversible chemical modification. We hypothesized that field modulation is a far more desirable path to chiroptical devices. We hypothesized that field modulation can be attained for chiral nanostructures with large circular dichroism and magnetic transition dipole moments to polarization rotation. We found that gels of paramagnetic Co₃O₄ nanoparticles with chiral distortions of the crystal lattice exhibited chiroptical activity in the visible range that was 10 times as strong as nonparamagnetic nanoparticles of comparable size. Transparency of circularly polarized light beams in the ultraviolet range was reversibly modulated by magnetic fields. These phenomena were also observed for other nanoscale materials with chiral distortions from imprinted amino acids and other chiral ligands. The ability to modulate the optical activity of ceramic nanostructures and gels can be pivotal for new technologies at the nexus of chirality and magnetism.

ARTICLE

DOI: 10.1038/s41467-018-04859-5 OPEN

Rational Zika vaccine design via the modulation of antigen membrane anchors in chimpanzee adenoviral vectors

César López-Camacho¹, Peter Abbink², Rafael A. Larocca², Wanwisa Dejnirattisai³, Michael Boyd², Alex Badamchi-Zadeh², Zoë R. Wallace⁴, Jennifer Doig⁵, Ricardo Sanchez Velazquez⁵, Roberto Dias Lins Neto⁶, Danilo F. Coelho⁶, Young Chan Kim¹, Claire L. Donald⁵, Ania Owsianka⁵, Giuditta De Lorenzo⁵, Alain Kohl⁵, Sarah C. Gilbert⁷, Lucy Dorrell⁴, Juthathip Mongkolsapaya^{3,8}, Arvind H. Patel⁵, Gavin R. Screaton⁹, Dan H. Barouch², Adrian V.S. Hill⁷ & Arturo Reyes-Sandoval¹

Zika virus (ZIKV) emerged on a global scale and no licensed vaccine ensures long-lasting anti-ZIKV immunity. Here we report the design and comparative evaluation of four replication-deficient chimpanzee adenoviral (ChAdOx1) ZIKV vaccine candidates comprising the addition or deletion of precursor membrane (prM) and envelope, with or without its transmembrane domain (TM). A single, non-adjuvanted vaccination of ChAdOx1 ZIKV

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Interaction of Water with the Gypsum (010) Surface: Structure and Dynamics from Nonlinear Vibrational Spectroscopy and Ab Initio Molecular Dynamics

Jaciara C. C. Santos^{†§}, Fabio R. Negreiros^{†§±}, Luana S. Pedroza[†], Gustavo M. Dalpian[†] , and Paulo B.Miranda[†] [†] Instituto de Física de São Carlos, Universidade de São Paulo, CP 369, São Carlos, São Paulo 13560-970, Brazil[‡] Centro de Ciências Naturais e Humanas, Universidade Federal do ABC, Santo André, São Paulo 09210-580, Brazil

J. Am. Chem. Soc., 2018, 140 (49), pp 17141–17152

DOI: 10.1021/jacs.8b09907

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Abstract

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Figures

References

DESENHO RACIONAL DE FÁRMACOS

- ▶ Eurofarma: 1ª e maior multinacional do ramo farmacêutico com capital 100% nacional
 - ▶ EmergeLabs
 - ▶ Mentoria para "cientistas empreendedores"
 - ▶ Synapsis
 - ▶ Aceleração de startups

ENTREVISTA DRAFT

"HÁ UMA OPORTUNIDADE PARA AS EMPRESAS FARMACÊUTICAS SE POSICIONAREM NO MERCADO DE HEALTHTECHS"

Priscilla Santos - 16 de maio de 2019



Marco Billi, gerente de corporate venture e novos negócios da Eurofarma (crédito: divulgação/Régis Filho)

**PODEMOS
AJUDAR?**



CLOUD HPC

IT PROFESSIONALS GUIDE

Computing and Engineering

CONNECT DIRECTIONS

PEOPLE NEWS & EVENTS RESOURCES



Why Cloud HPC? Cloud HPC Technology Services Performance Glossary

Massachusetts Open Cloud



Built upon a unique academic, industry, and government partnership, the The Massachusetts Open Cloud (MOC) is comprised of deeply interconnected projects with the same goal: to develop an open, production-quality cloud computing system that enables research and provides leading-edge services for

scientific computing. While today's clouds are owned, operated, and controlled by a single provider, the MOC is creating a two-sided marketplace. This will allow multiple providers to compete on a level playing field and give users control over which services and resources they consume.

Housed within the Cloud Computing Initiative (CCI), the MOC provides a structure and testbed for the Modular Approach to Cloud Security (MACS) and Smart-city Cloud-based Open Platform and Ecosystem (SCOPE) projects.

RESEARCH →

Sponsored Research

[Massachusetts Open Cloud](#)

[MOC \(in the\) News](#)

[MACS: A Modular Approach to Cloud Security](#)

[Smart-City Cloud Platform](#)

[BU/Lincoln Lab Collaboration](#)

Incubated Research

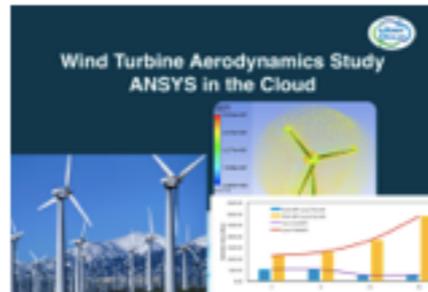
HPC AS A SERVICE



CFD Simulation of Vertical Axis Wind Turbines using CD-adapco STAR-CCM+

Learn about why the Cloud is ideally suited for Computationally Demanding Parameter Studies. Since each wind speed and tip-speed ratio runs independently, progress is limited only by core-count and licenses.

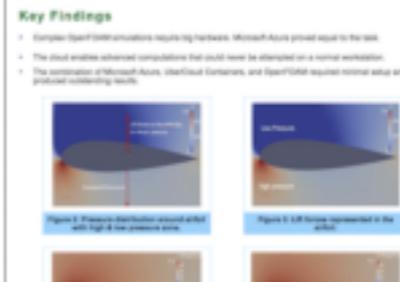
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Wind Turbine Aerodynamics

With an ever increasing energy crisis occurring in the world it will be important to investigate alternative methods of generating power other than fossil fuels. Wind energy is an abundant resource in comparison with other renewable resources. The case study refers to the evaluation of wind turbine performance using a Computational Fluid Dynamics (CFD) approach. Standard wind turbine designs are considered for this UberCloud experiment and the CFD models were generated in the Workbench environment.

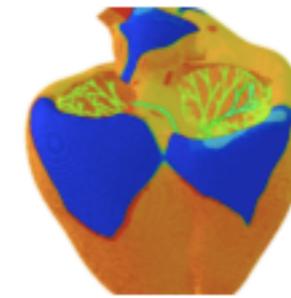
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Aerodynamic Simulation Of Airfoil With OpenFOAM on UberCloud & Microsoft Azure

Complex OpenFOAM simulations require big hardware. But with HPC Cloud capabilities, accurate prediction of flow behavior becomes routine

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Simulating Drug-Induced Arrhythmias Of A Human Heart With Abaqus In The Cloud

Before a new drug reaches the market, pharmaceutical companies need to check for the risk of inducing arrhythmias. Currently, this process takes years and involves costly animal and human studies. With this new software tool, drug developers would be able to quickly assess the viability of a new compound. This means better and safer drugs reaching the market to improve patients' lives.

[Read More](#)

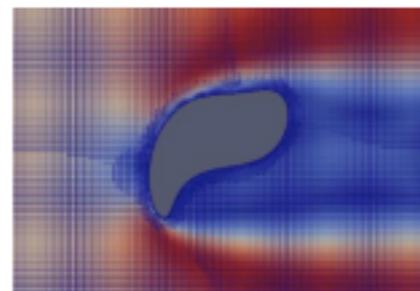
Thermal Modelling of a Fragrance Extraction Reactor in the Cloud with COMSOL Multiphysics
An UberCloud / ForCES Cloud Experiment



Thermal Modeling of a Fragrance Extraction Reactor on UberCloud & COMSOL Multiphysics

Learn how HPC cloud offerings such as UberCloud can augment the internal on-premise hardware to allow for more detailed and faster simulations using COMSOL Multiphysics

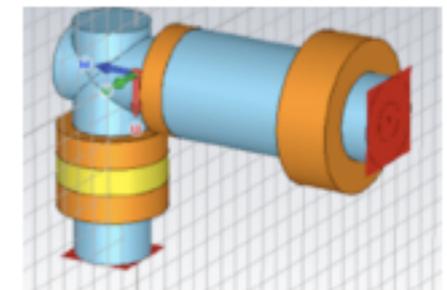
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Deep Learning For Steady-State Fluid Flow Prediction In the Cloud

Learn how Artificial Neural Networks were applied to solve CFD problems in the cloud. Time-to-solution was significantly decreased, while preserving traditional CFD solver accuracy.

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Simulation Of A Multi-Resonant Antenna System Using CST MICROWAVE STUDIO

Learn how CST Microwave Studio running on Amazon Web Services, has been used for the simulation of a multi-resonant antenna system.

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DESAFIOS

- ▶ Aspectos legais
 - ▶ Pesquisa X Produção
 - ▶ Faturamento
- ▶ Aspectos técnicos
 - ▶ Isolamento/containerização
 - ▶ Bilhetagem



[James Green](#) on January 25, 2016 at 10:00 am

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[HTTPS://WWW.FACEBOOK.COM/SISTEMA-NACIONAL-DE-PROCESSAMENTO-DE-ALTO-DESEMPENHO-SINAPAD-135321166533790](https://www.facebook.com/sistema-nacional-de-processamento-de-alto-desempenho-sinapad-135321166533790)

THANK YOU!

OBRIGADO!



I Workshop

Sinergia LNCC-empresas

A peça que faltava para a
inovação na sua empresa

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