GATAS Lab Retreat Spring '24

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well i'll tell you

AlgebraicJulia: AQUA.jl

Proliferating AQUA.jl in the repos.

AlgebraicJulia: Linting

Feature: two-space identing as a github action

AlgebraicJulia: 100% Names Documentation

- #52413 Undocumented names will be in 1.11

Decapodes: ASKEM

Interpolating NetCDF data to calculate takeoff distance using climate predictions

Decapodes

- `cm/compiler-refactor`

Doc-Driven Development: Georges dePrawmn

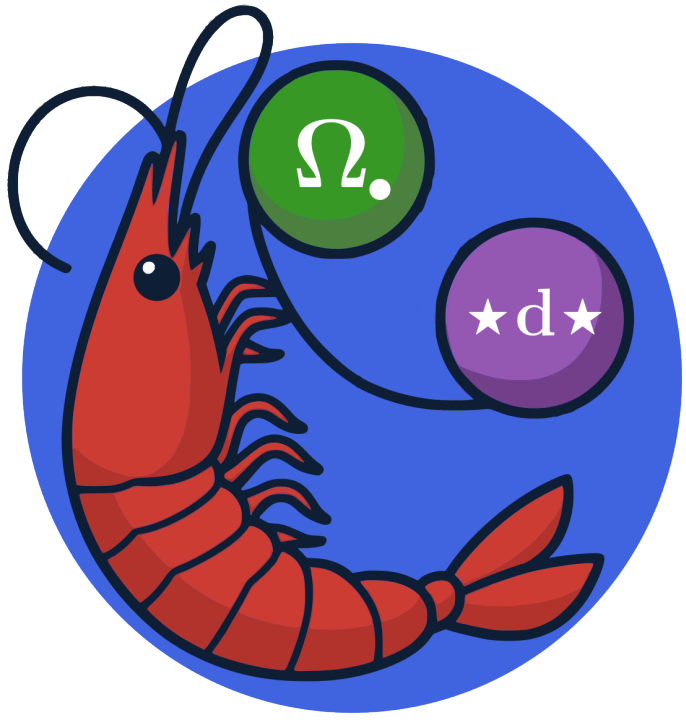


Figure 1: #219 GdP with a chain complex and divergence

discussing merchandise with our distributors

DDD: Our Documentation

`cm/docs-pmap` will feature:

- (most) examples compiling with Literate.jl
- `docs/src/` examples categorized by physics
- docs compilation takes just over an hour

To Come:

- merging the branch
- using a common schema for organizing models in `Canon`, `examples`, `r`

DDD: @docapodes

- `@docapodes` allows us to specify a decapode and its documentation without defining the model twice.
- Canon

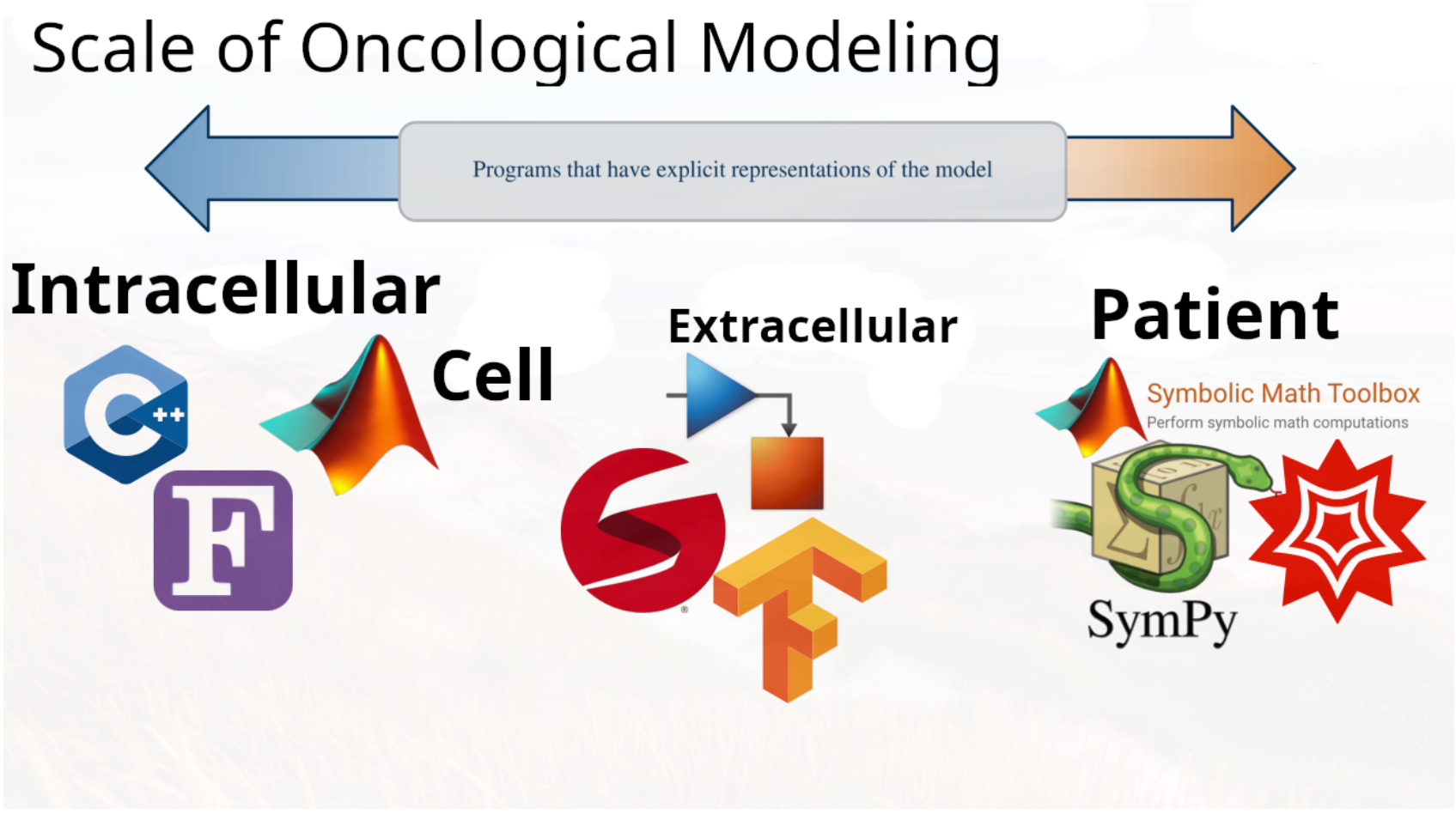
DDD: docapodes

- it also allows users to invoke a pre-defined physical law

DDD: Oncology

- Integrated Mathematical Oncology (IMO) dept. is an interdisciplinary modeling lab in Moffitt
- Myself, Luke, and George have been working together to model basic systems involving growth laws.

DDD : Oncology



DDD: Oncology: Logistic and Gompertz

DDD: Oncology: Angiogenesis

- Angiogenesis

DDD: Oncology: Technical Improvements

Anonymized `simulate` function to eliminate shadowing

```
begin
  (mesh, operators, hodge=default) -> begin
    (...)
  end
end
```

in `DE#cm/decapodes-api`…

- `setname!`, `setvartype! freeze!` and `unique_vars!` and their pure variants are now functions in `DE/src/acsets.jl`

DiagrammaticEquations.jl

DDD: gatdoc

Tagged in v0.1.1

- @gatdoc (#139 and #142) allows you add the definition of the theory in its documentation

GATlab

`multiple-inheritance` will feature pushouts of GATlab theories. Can we specify new theories in a Julian way?

```
@theory ThRing begin
  using ThAb: \cdot as +, i as -, e as zero
  using ThMonoid: \cdot as *, e as one
  a * (b + c) == (a * b) + (a * c) \dashv [a,b,c]
end

@theory ThCRing begin
  using ThRing
  a * b == b * a \dashv [a,b,c]
end
```

Lab Infrastructure: Buildkite

- every lab member has an BK agent
- est. end of month migration to PUBAPPs

Other: Sheaves

Sheaf class!

Other: @less for constants

Kudos to James

`@less const`

Other: d'Alembertapodes

Came across d'Alembert's operator

$$\Box = \frac{1}{c^2}\frac{\partial^2}{\partial t^2} + \Delta$$