



Universidad deValladolid

Flexible Motion Models for GPU-accelerated MRI Simulations with Complex Motion and Flow using KomaMRI

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💭 github.com/JuliaHealth/KomaMRI.j

SUMMARY

KomaMRI.jl was extended to include (1) mix-and-match simple motions and (2) complex arbitrary motions, while maintaining high performance and GUI interactivity.

The phantom structure currently existing in the simulator has been extended by

METHODS



adding a new AbstractMotion type.

The MotionList (<: AbstractMotion) structure allows to include in the phantom as many motions as desired. Each of these motions can have its own action, time span and range of affected spins.

Results demonstrate how typical motion patterns can be recreated and how common motion MRI techniques (such as phase contrast, cardiac cine, tagging...) can be simulated over these dynamic phantoms.

Computation speed is higher than in other current MRI simulation tools.

This contribution has also led to the definition of a new *.phantom* file format, which allows to easily store, share and visualize phantoms.

RESULTS











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