

# Computational Electromagnetics

## Novel Numerical Methods

Advancement of characteristic mode theory.

## Fundamental Bounds on Antennas

Modal decomposition, convex optimization, Pareto optimality.

## Antenna Synthesis

Design rules for antennas, heuristic optimization, genetic algorithms.

## Stored Electromagnetic Energy and Q-factor

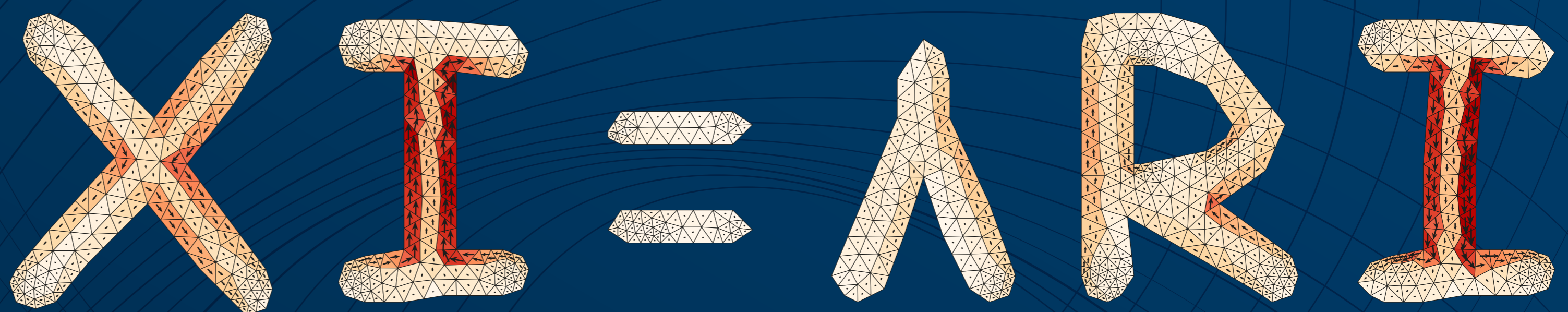
Energy stored in EM field, proportionality of bandwidth and Q-factor.

## Source Concept

*Operators to rule them all...*

## Antenna Toolbox for MATLAB – AToM

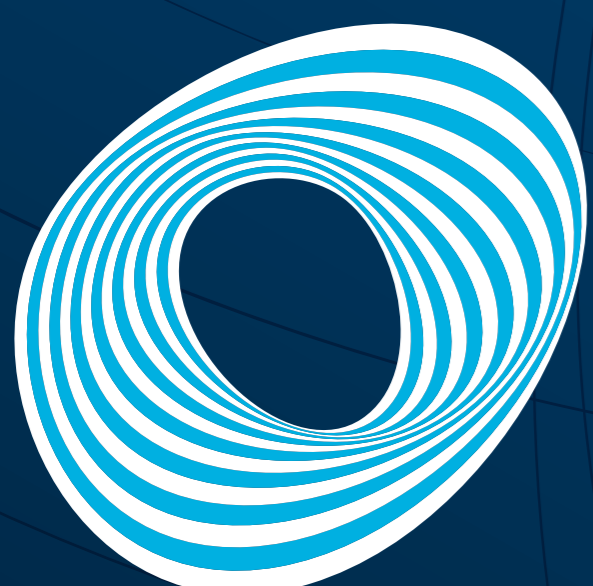
MATLAB implementation of the source concept in 200 kLines.



**AToM**  
ANTENNA TOOLBOX FOR MATLAB

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