

## **Reduced Basis Method: Recent improvements and applications to the Electromagnetic Wave Problems**

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Models of reduced computational complexity is indispensable in scenarios where a large number of numerical solutions to a parametrized problem are desired in a fast/real-time fashion. Thanks to an offline-online procedure and the recognition that the parameter-induced solution manifolds can be well approximated by finite-dimensional spaces, reduced basis method (RBM) can improve efficiency by several orders of magnitudes. The accuracy of the RBM solution is maintained through and the construction of the finite-dimensional RBM space is guided by an error estimation mechanism whose efficient development is critical.

After giving a brief introduction of the RBM, this talk will present some of our recent improvements and innovations before detailing its successful application to various electromagnetic wave problems.