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TITLE:

The stability of numerical approximations of the time domain current induced on thin wire and strip antennas

ABSTRACT:

We derive and analyse collocation approximations of retarded potential integral equations (RPIEs) arising as models of scattering of waves from thin wire and strip antennas. In particular we derive midline collocated and transversely averaged strip RPIEs and show how they are related to the thin wire exact kernel RPIE. We analyse the temporal stability of piecewise constant and linear in time approximations of these three RPIEs. All three are stable when piecewise constant in time approximation is used, but only the transversely averaged strip approximation is stable with piecewise linear time approximation.