



An analytic solution for GRACE range rates and the initial condition problem

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The GRACE mission leaves despite its pioneering results still open questions concerning undesired artefacts in self-contained gravity field solutions. The convenience of numerical integration seems to settle for the lack of insight, why those phenomena occur. A possible explanation could be the collateral estimation of initial values, i.e. osculating elements that have to be determined for each interrelated arc-wise segment during the data processing. A complex analytic solution shall help to better understand the initial value contribution to the range-rate signal and give further the opportunity to enhance solution procedures.