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Displacement estimation of GPS station using Extended Kalman filter

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Most of the changes of the earth surface and also prediction of its procedure in base design is unavoidable, so today an important application of geodesy is to measure these changes.
Establishing of permanent GPS network in our study zone is a solution to detect these changes. In this network these observations are done continuously and we achieve a time series by processing this data. We reach changes of station positions by estimating derivation on the time series using extended Kalman's filter or existing numerical methods.
Deformation parameters are calculated by substituting these changes into strain equation.

Keyword: Extended Kalman filter, Displacement, GPS network