

# On the regularity of the Landweber transform

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## Abstract

We consider the split convex feasibility problem in a fixed point setting. Based on the well-known CQ-method of Byrne (2002), we define an abstract Landweber transform which applies to more general operators than the metric projection. It turns out that the Landweber transform preserves many interesting properties. For example, the Landweber transform of a (quasi/firmly) nonexpansive mapping is again (quasi/firmly) nonexpansive. Moreover, the Landweber transform of a (weakly/linearly) regular mapping is again (weakly/linearly) regular. These regularity properties are relevant because they lead to (weak/linear) convergence of many CQ-type methods. We show the relations of the Landweber operator for linear inequalities to the simultaneous projection operator, to the extrapolated simultaneous projection and to the extrapolated Landweber operator.