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A NOTE ON KACZMARZ ALGORITHM WITH REMOTEST SET CONTROL SEQUENCE *

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Dedicated to Professor Mihail Megan
on the occasion of his 70th anniversary

Abstract

In this paper we analyse the Kaczmarz projection algorithm with remotest set control of projection indices. According to this procedure, at each iteration the projection index is one which gives the maximal absolute value of the corresponding residual. We prove that for underdetermined full row rank systems and under some assumptions valid for problems arising in algebraic reconstruction of images in computerized tomography, this selection procedure has the property that each row index is selected at least once during the Kaczmarz algorithm iterations.

MSC: 65F10, 65F20

keywords: Kaczmarz algorithm; remotest set control

1 Introduction

For A an $m \times n$ (real) matrix A and $b \in I\!R^m$ in this paper we will consider the consistent (compatible) system of linear equations

$$Ax = b, \tag{1}$$

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