



## $\sigma$ -ASYMPTOTICALLY LACUNARY STATISTICAL EQUIVALENT FUNCTIONS ON AMENABLE SEMIGROUPS

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### Abstract

We introduce the concepts of  $S_\sigma$ -asymptotically equivalent,  $S_{\sigma, \lambda}$ -asymptotically equivalent,  $\sigma$ -asymptotically lacunary statistical equivalent and strong  $(\sigma, \theta)$ -asymptotically equivalent functions defined on discrete countable amenable semigroups, and establish certain inclusion theorems.

### 1. Introduction

Let  $E$  be a subset of  $\mathbb{N}$  and  $\chi_E$  be the characteristic function of  $E$ .

Natural density of  $E$  is defined by  $d(E) := \lim_n \frac{1}{n} \sum_{j=1}^n \chi_E(j)$  whenever the limit exists.

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Received: August 31, 2017; Accepted: October 27, 2017

2010 Mathematics Subject Classification: 40A35, 40G15.

Keywords and phrases: Lacunary statistical convergence,  $\sigma$ -convergence, amenable semigroups.