**All Abstracts SAA 2019 – Actigraphy Symposium**

**Symposium Abstract**

**Keeping pace with Actigraphy research: Recent innovations in actigraphy based time-series of depressed, bipolar, or schizophrenic patients**

***Abstract:*** The past few years have seen increased academic interest in *actigraphy* as a way to monitor physical activity. This interest was sparked by the unique advantages of actigraphy, which facilitates easy and ecological valid measurements while minimizing risks of social desirability and recall bias.

Given the current academic interest in actigraphy, this symposium aims to present and elucidate recent developments in innovative statistical approaches of actigraphy based time-series of depressed, bipolar, or schizophrenic patients. The first presentation will focus on the technical aspects of handling large actigraphy datasets by introducing an automatisation solution for preprocessing steps and analysis of raw actigraphy data into sleep and circadian rhythms outcome variables. The second presentation will then introduce a large cohort study including individuals with and without a clinical diagnosis for depression, wherein actigraphy is used to compare levels of activity, amplitudes of 24 hour activity profiles, and timing of daytime activities, between depressed and non-depressed groups. The third presentation then focusses on actigraphy as a possible measure for apathy in patients with schizophrenia, as such apathy is associated with a decrease in goal-directed behaviour. This presentation furthermore elucidates the association of activity variability, quantity, and initiation with apathy severity. Lastly, the fourth presentation will demonstrate the feasibility of augmenting actigraphy with Ecological Momentary Assessment data by providing extensive and relevant information on regulatory variables such as mood, exercise, and life events. This research thereby provides innovative solutions for assessing complex human homeostatic networks.

***Keywords* -- Actigraphy, mood-disorders, schizophrenia, circadian rhythm, sleep**

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**Yoram**

**Automated management and analysis of physical activity data: Facilitating convenient sleep and circadian rhythm preprocessing and analysis**

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***Abstract:*** Actigraphy is a non-invasive technique to monitor gross motor movement. From the data provided by actigraphs, various indicators of sleep, activity, and diurnal rhythm can be calculated. The last years have seen an increased interest in the use of actigraphy, especially since actigraphy was validated against the *golden standard* of polysomnography for sleep outcome measures, and was found to be non-invasive, easy to use, and relatively cheap. However, there are a number of constraints in the current way of performing actigraphy research, which diminish its feasibility in handling the ever larger datasets and thereby general scalability of actigraphy research. We propose a solution in the form of the innovative ACTman (ACTigraphy MANager) R-package. ACTman is open-source and therefore free and easy to use by researchers, while supporting ongoing development and offering transparency in calculation and preprocessing steps. Thereby, ACTman allows actigraphy researchers to investigate larger samples and datasets, while decreasing chances of human error and increasing reproducibility. Moreover, we will present results indicating that ACTman substantially reduces analysis runtimes by automating data preprocessing steps, while offering analysis quality that is on par with proprietary software suites.

***Keywords --* Actigraphy, Circadian rhythm, Sleep, Software**

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