

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

How doing a dynamical analysis of gait movement may provide information about Autism D. WU, Indiana Univ , E. TORRES, J. NGUYEN, S. MISTRY, C. WHYATT, V. KALAMPRATSIDOU, Rutgers Univ., A. KOLEVZON, Mount Sinai, J. JOSE, Indiana Univ — Individuals with Autism Spectrum Disorder (ASD) are known to have deficits in language and social skills. They also have deficits on how they move. Why individuals get ASD? It is not generally known. There is, however, one particular group of children with a SHANK3 gene deficiency (Phelan-McDermid Syndrome (PMDS)) that present symptoms similar to ASD. We have been searching for universal mechanism in ASD going beyond the usual heterogeneous ASD symptoms. We studied motions in gaits for both PMDS patients and idiopathic ASD. We have examined their motions continuously at milliseconds time scale, away from naked eye detection. Gait is a complex process, requiring a complex integration and coordination of different joints' motions (Bernstein, N., 1967). Significant information about the development and/or deficits in the sensory system is hidden in our gaits. We discovered that the speed smoothness in feet motion during gaits is a critical feature that provides a significant distinction between subjects with ASD and typical controls. The differences in appearance of the speed fluctuations suggested a different coordination mechanism in subjects with disorders. Our work provides a very important feature in gait motion that has significant physiological information.

Di Wu
Indiana Univ

Date submitted: 11 Nov 2016

Electronic form version 1.4