ID de Contribution: **75** Code de contribution: **poster_s2_3**   Type: **Poster** + **lightning talk**

SNAD miner: Finding Missed Transient Events in ZTF DR4

mardi 21 juin 2022 11:16 (1 minute)

We report the automatic detection of 11 transients (7 possible supernovae and 4 active galactic nuclei candidates) within the Zwicky Transient Facility fourth data release (ZTF DR4), all of them observed in 2018 and absent from public catalogs. Among these, three were not part of the ZTF alert stream. Our transient mining strategy employs 41 physically motivated features extracted from both real light curves and four simulated light curve models (SN Ia, SN II, TDE, SLSN-I). These features are input to a k-D tree algorithm, from which we calculate the 15 nearest neighbors. After pre-processing and selection cuts, our dataset contained approximately a million objects among which we visually inspected the 105 closest neighbors from seven of our brightest, most well-sampled simulations, comprising 89 unique ZTF DR4 sources. Our result illustrates the potential of coherently incorporating domain knowledge and automatic learning algorithms, which is one of the guiding principles directing the SNAD team. It also demonstrates that the ZTF DR is a suitable testing ground for data mining algorithms aiming to prepare for the next generation of astronomical data.

Auteurs principaux: M. ALEO, Patrick (University of Illinois at Urbana-Champaign); MALANCHEV, Konstantin (University of Illinois at Urbana-Champaign); Dr PRUZHINSKAYA, Maria (Sternberg Astronomical Institute, Lomonosov Moscow State University); Dr ISHIDA, Emille (Universit´e Clermont Auvergne, CNRS/IN2P3, LPC); Dr KORNILOV, Matwey (Sternberg Astronomical Institute, Lomonosov Moscow State University); Dr KOROLEV, Vladimir (SNAD); M. RUSSEIL, Etienne (Universit´e Clermont Auvergne, CNRS/IN2P3, LPC); Dr SREEJITH, Sreevarsha (Physics Department, Brookhaven National Laboratory); Dr VOLNOVA, Alina (Space Research Institute of the Russian Academy of Sciences (IKI)); Prof. NARAYAN, Gautham (University of Illinois at Urbana-Champaign)

Orateur: MALANCHEV, Konstantin (University of Illinois at Urbana-Champaign)

Classification de Session: Lightning talks

Classification de thématique: Time Domain Astrophysics