

Training opportunity for graduates/young professionals from Switzerland

Reference	Title	Duty Station
CH-2020-SCI-SDE	Euclid Survey: Detection of solar system object	ESAC
<p><u>Overview of the unit's mission:</u></p> <p>The Euclid Science Operations Centre (SOC) at ESAC is in charge of preparing and then running the science operations of the Euclid mission after launch. SOC tasks include planning the Euclid survey, initial processing and quick look analysis of the instrument data. The SOC works with the Euclid Consortium who is responsible for the calibration and processing of the science data. ESAC hosts the Euclid Archive that manages the distribution and archiving of the Euclid data products needed for the core and legacy science of the Euclid Mission.</p>		
<p><u>Overview of the field of activity proposed:</u></p> <p>Euclid is an ESA mission to be launched in 2022 to characterize dark energy and dark matter by mapping during 6 years one third of the extragalactic sky in the visible and 3 near-infrared bands to a depth of 24.5 magnitude. Given its exquisite PSF and depth it should also detect more than 10^5 solar system objects (SSOs) (Carry, A&A, 2018). Two pipelines have been developed over the last 2 years to detect SSOs in the Euclid survey, intended to be run at ESAC on level 1 data as soon as available. One for slow moving SSOs (mostly distant Trans-Neptunian Objects) with a classical technique (SExtractor and Scamp) and another one for fast moving brighter SSOs with StreakDet.</p> <p>The objective of this traineeship would be:</p> <ul style="list-style-type: none"> • Integrate the pipeline in the operational environment at ESAC running on the level 1 data. • Run new simulations to confirm the completeness and purity of these methods • Make use of the Euclid SkyBot to define the detection envelop of the various types of SSOs. • Investigate the possible use of Machine Learning for the detection of SSOs in the Euclid maps. <p>You will be integrated in the Euclid SOC but the study will be performed in collaboration with the Observatoire de la Côte d'Azur, University of Helsinki, Lecce observatory, as well as ESRIN.</p> <p>You are encouraged to visit the ESA website: www.esa.int/esa</p>		
<p><u>Required education:</u></p> <ul style="list-style-type: none"> • Master in computer science or equivalent, • some experience in astronomy data processing would be an asset • Desirable expertise or programming language: Python, C++ • Good interpersonal and communication skills; • Ability to work in a multicultural environment, autonomously and as part of a team; • Fluency in English and/or French, the working languages of the agency 		