FJPPL (TYL) application 2024

Fiscal year April 1st 2024 – March 31th 2025

Please replace the red examples by the appropriate data in black

ID[1]:	Title: Characterization of the upgraded J-PARC neutrino beam for T2K-II and HK experiments					
	French Group			**Japanese Group**		
	name (Family name, First name)	**title**	**lab.[2]**	**name** (Family name, First name)	**title**	**lab.[2]**
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	Giganti Claudio	Dr	LPNHE	Nishimori Sakiko	PhD	KEK
	Guigue Mathieu	Dr	LPNHE	Koshio Yusuke	Prof	Okoyama Univ
	Russo Stefano	Dr	LPNHE	Shiraishi Yuki	PhD	Okoyama Univ
	Voisin Vincent		LPNHE	Megan Friend	Prof	KEK

Funding Request from France

Description	€/unit	nb of units	total (€)	requested to[3]
Visit to Japan	150/day	20 days	3000	IN2P3
Travel	1500	2 travel	3000	IN2P3
Total			6000	

Funding Request from Japan

Description	k¥/Unit	nb of units	total (k¥)	requested to[3]
Visit to France	20/day	20 days	400	KEK
Travel	150	2 travels	300	KEK
Total			700	

Additional Funding from France			Additional Funding from Japan		
provided by/requested to[4]	**Type**	**€**	**provided by/requested to[4]**	**Type**	**k¥**
IN2P3 AP		31000	JSPS	travel	140
Total			Total		

[1] ID: If program continuation, use previous ID; if new project, ID will be set by the TYL directors;

[2] e.g. LAPP/IN2P3, Irfu/CEA, IPNS/KEK, etc.

[3] IN2P3, Irfu or KEK

[4] e.g. French Embassy, other CNRS or CEA programs, PICS, European grants, JSPS, RIKEN, Universities ….;

22

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33

44

44

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Summary Of 2024 Project	In 2024 we will continue our very successful joint France-Japan project with the main goal of improving our knowledge on the upgraded (anti)neutrino beam produced at J-PARC for T2K-II and HyperKamiokande (HK) experiments. After the important J-PARC neutrino beamline upgrade, it restarted the operation at the end of 2023 achieving the record beam power of 760kW. Moreover, operation with a horn current set at 320kA (instead of 250kA used previously) is now tested. In 2024 at least two physics data-taking periods are planned. The measurements of hadron yields from the surface of the T2K target performed with the upgraded NA61/SHINE spectrometer at the CERN SPS are crucial for detailed characterization of the J-PARC neutrino beam and already allowed to achieve unprecedented precision on flux uncertainties. New data (180M triggers compared to 10M used previously) collected during the 2022 are currently being calibrated and analyzed by a joint team of Japanese and French physicists. In 2024 we plan to finalize the calibration of the raw data and to start the analysis efforts. In 2024 we also plan to finalize the design of the new time synchronization system being developed for the J-PARC neutrino beam by the joint French-Japanese team. Some additional stability tests would have to be performed on the J-PARC site. A free-running rubidium atomic clock accompanied by a set of GNSS antenna and receivers will be installed at J-PARC, characterized and maintained. In 2024 we also plan to prepare a publication devoted to the results of the new HyperKamiokande sensitivity studies.
Satellite meeting at annual workshop	The group meets regularly on the occasion of NA61/SHINE, T2K and HK collaboration meetings. We also organize dedicated Zoom meetings in order to discuss the ongoing activities and to define plans for the future. In-person workshops are also being scheduled, if needed.
Articles, conference talks & posters related to the TYL project	**Development of a Clock Generation and Time Distribution System for Hyper-Kamiokande,** Lucile Mellet, Mathieu Guigue, Boris Popov, Stefano Russo,Vincent Voisin, 2023, *Phys.Sci.Forum* 8 (2023) 1, 72; DOI: **10.3390/psf2023008072** **Updated T2K measurements of muon neutrino and antineutrino disappearance using 3.6x10^{21} protons on target,** T2K Collaboration, K.Abe et al, 2023, *Phys.Rev.D* 108 (2023) 7, 072011; DOI: **10.1103/PhysRevD.108.072011** **Addressing the challenge of neutrino interaction uncertainties in Hyper-Kamiokande ,** C.Dalmazzone (for HK collaboration), talk at the NNN'2023 conference, October 2023
Jointly Supervised Students	

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Comment related to IRL TYL & ILANCE	