UNIVERSITA' DEGLI STUDI DI NAPOLI FEDERICO II

DIPARTIMENTO DI STRUTTURE PER L'INGEGNERIA E L'ARCHITETTURA
CORSO DI DOTTORATO DI RICERCA IN
INGEGNERIA STRUTTURALE GEOTECNICA E RISCHIO SISMICO

XXXVI CICLO

Il sottoscritto prof. _Iunio Iervolino_____

(PO X PA □ RU □ RTD □)afferente al Dipartimento di _Strutture per l'ingegneria e l'Architettura

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_____S.S.D. (*indicare codice e nome per esteso*_ICAR/09 Tecnica delle Costruzioni_____)

CHIEDE

di essere inserito nell'elenco dei tutor per il XXXVI ciclo.

1. Curriculum del proponente - CV (max 500 parole)
Iunio Iervolino is full professor of earthquake engineering and structural dynamics at the University of Naples Federico II. Iunio Iervolino has two masters, one in structural engineering and one in management engineering, and one Ph.D. in seismic risk. Since his Ph.D. thesis on the topic of seismic risk assessment of process industry facilities, he has authored more than three hundred publications in the field of risk assessment for civil structural and infrastructural systems and earthquake early warning methods. He has among the largest bibliometric indices in his field in Europe. Among awards and honors, he received the AXA research fund grant in 2011, and in 2014 he was appointed Fulbright visiting professor at Stanford University. In recognition of his competency, Iunio Iervolino has been or is consultant for seismic risk to public authorities (e.g., the ministry of economics in the Netherlands, for the Groningen induced seismicity issue) or private entities (e.g., AXA-MATRIX risk consultants, for seismic risk management of industrial facilities).Professor Iervolino also recently joined as editor Further information can be found at: http://wpage.unina.it/iuniervo/

2. Dottorandi dei quali il proponente è stato tutor nell'ultimo triennio	
	2 borse di ateneo, 1 borsa pon, 1 senza borsa (finanziato su fondi propri) – dottorato in co-tutela con

n. _4____	*la Grecia (Università di Atene).*

3. Titolo della ricerca proposta – Research Title

Seismic structural reliability and seismic structural design.

4. Area Tematica

Ingegneria Geotecnica □

Ingegneria Strutturale X

Rischio Sismico □

5. Sintesi del progetto di ricerca (max 500 parole. Stato dell'arte, breve programma previsto per le attività e obiettivi) – Research project synopsis

Seismic structural design does not account for foreshocks and aftershocks in defining the design seismic structural actions. On the other hand, seismic design procedures do not consider possible damage accumulation in multiple earthquakes. Part of the research project is devoted to understanding the effects of seismic sequences on the structural reliability of code-conforming structures. Subsequently, to developing basis for the next generation of seismic codes to account for the effect of seismic sequences in design on both the seismic demand and the seismic capacity sides.

Because recent research has shown that the seismic structural reliability in the performance-based seismic design does not warrant uniform seismic safety in sites exposed to different seismic hazard, part of the project is devoted to developing design procedures, as close as to possible, the actual design approaches, yet warranting the same structural reliability independently of seismic hazard. The work may involve, among other tasks, recalibrating behavior factors, redefining-design limit states, and introducing in seismic design of the recently developed *peak-over-threshold*(see references).

6. Pubblicazioni sul tema di ricerca– Research publications on the project topics

- Cito P., Iervolino I. (2020) Peak-over-threshold: quantifying ground motion beyond design. Earthquake Engineering and Structural Dynamics. DOI: 10.1002/eqe.3248
- Iervolino I., Giorgio M., Cito P. (2019) The peak over the design threshold in strong earthquakes. Bulletin of Earthquake Engineering, 17:1145–1161.
- Iervolino I., Giorgio M., Cito P. (2019) Which earthquakes are expected to exceed the design spectra? Earthquake Spectra, 35: 1465–1483.
- Iervolino I., Spillatura A., Bazzurro P. (2018) Seismic reliability of code-conforming Italian buildings. Journal of Earthquake Engineering, 22(S2): 5-27.
- Iervolino I., Chioccarelli E., Giorgio M., (2018) Aftershocks' Effect on Structural Design Actions in Italy. Bulletin of the Seismological Society of America, 108(4): 2209–2220.
- Iervolino I., Giorgio M., Chioccarelli E. (2016) Markovian modeling of seismic damage accumulation. Earthquake Engineering and Structural Dynamics. 45(3):441–461.
- Iervolino I., Giorgio M., Polidoro B. (2015) Reliability of structures to earthquake clusters. Bulletin of earthquake engineering, 13: 983–1002.
- Iervolino I., Giorgio M., Polidoro B. (2014) Sequence-based probabilistic seismic hazard analysis. Bulletin of the Seismological Society of America, 104(2): 1006-1012.
- Iervolino I., Giorgio M., Chioccarelli E. (2014) Closed-form aftershock reliability of damage-cumulating elastic-perfectly-plastic systems. Earthquake Engineering and Structural Dynamics, 43:613–625.

7. Progetti di ricerca finanziati in cui l'attività si inserisce

- ReLUIS 2019-2021 Italian Civil Protection Research project: http://www.reluis.it/index.php?option=com_content&view=article&id=549&Itemid=198&lang=it
- Rise – H2020 2019-2021 European project: http://www.rise-eu.org/
- GRISIS – 2019-2021 Italian Ministry of Research project:http://www.stress-scarl.com/it/innovazione/i-progetti-nazionali/grisis.html
- Other prjects will start in 2020.

8. Fondi disponibili per eventuali assegni, borse di ricerca, ecc., per acquisto

eventuale di attrezzature, missioni – Available funds
The same projects above will provide funds for salaries and activities. The research group of prof. Iervolino has a few million euros of research funds to rely on.

9. Informazioni relative ad un periodo di ricerca all'estero (minimo tre mesi) previsto per il dottorando (*indicare Università/ente di ricerca e docente/ricercatore di riferimento*) (max 300 parole)
Prof. Iervolino has extended research collaborations outside Italy, most notably: Stanford University, where he's affiliated (see https://profiles.stanford.edu/iunio/) and where the main contact is prof. Jack W. Baker. Within Europe, one strong collaboration is with ETH-Zurich, within the RISE project, with professors Bozidar Stojadnovic and Eleni Chatzi.

10. Eventuali collaborazioni con imprese/aziende sul tema di ricerca (max 300 parole)
The professor Iervolino's group collaborates, on the same topics of the proposed project, with ARUP (https://www.arup.com/London and Milan offices) and with AXA-XL (https://axaxl.com/) risk consultants, with Paris, Milan and Naples' offices.

Napoli,_14/2/2020_____ FIRMA

Il presente modulo va compilato in ogni sua parte ed inviato all'indirizzo di posta elettronica phd.dist@unina.it entro e non oltre **venerdì14/02/2020**.