

WIFAI 2023

Workshop Italiano sulla Fisica ad Alta Intensità

Roma 8-10 Novembre 2023

Aula Magna Adalberto Libera – ex Mattatoio

Via Aldo Manuzio 68L

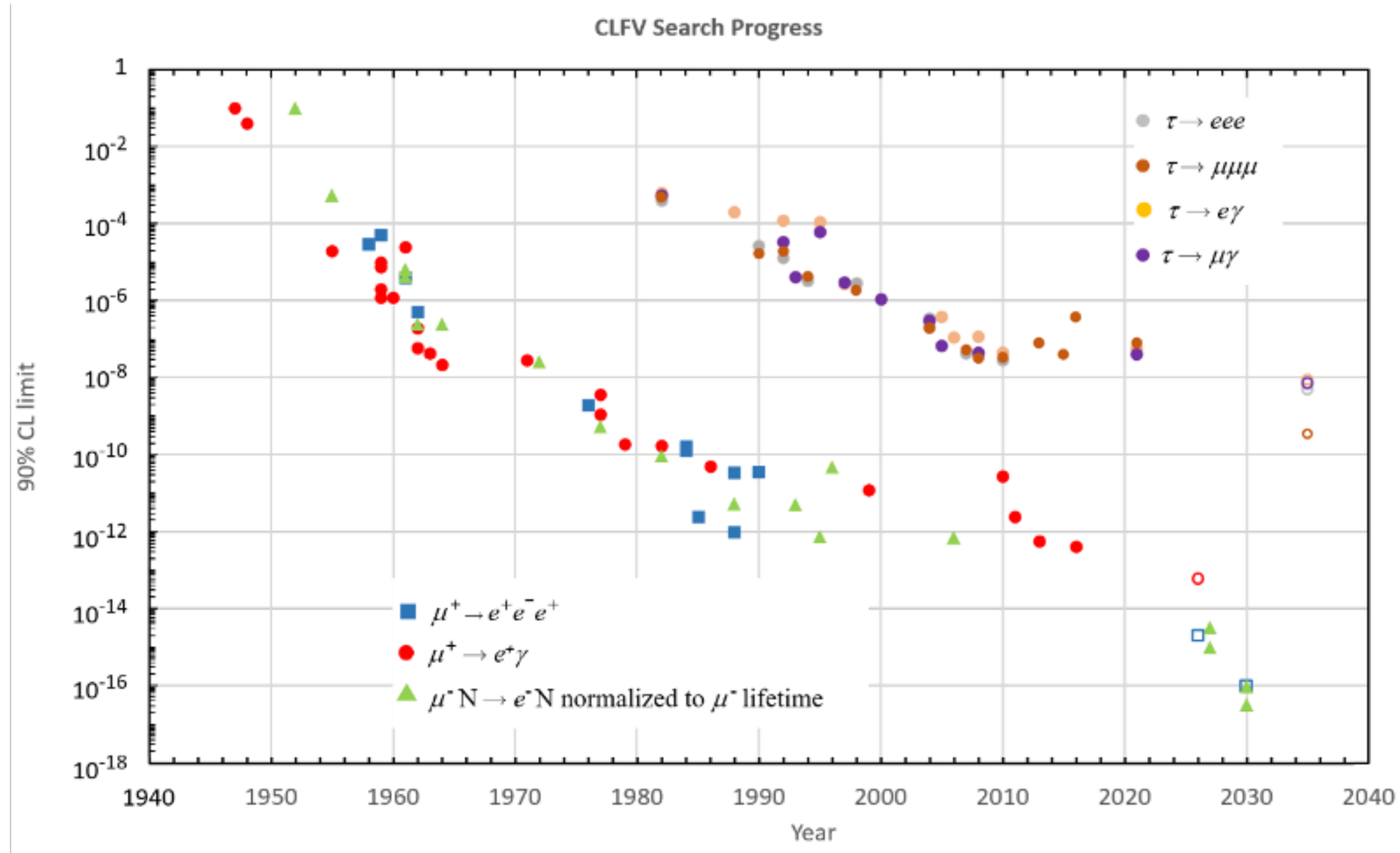


(c)LFV Session

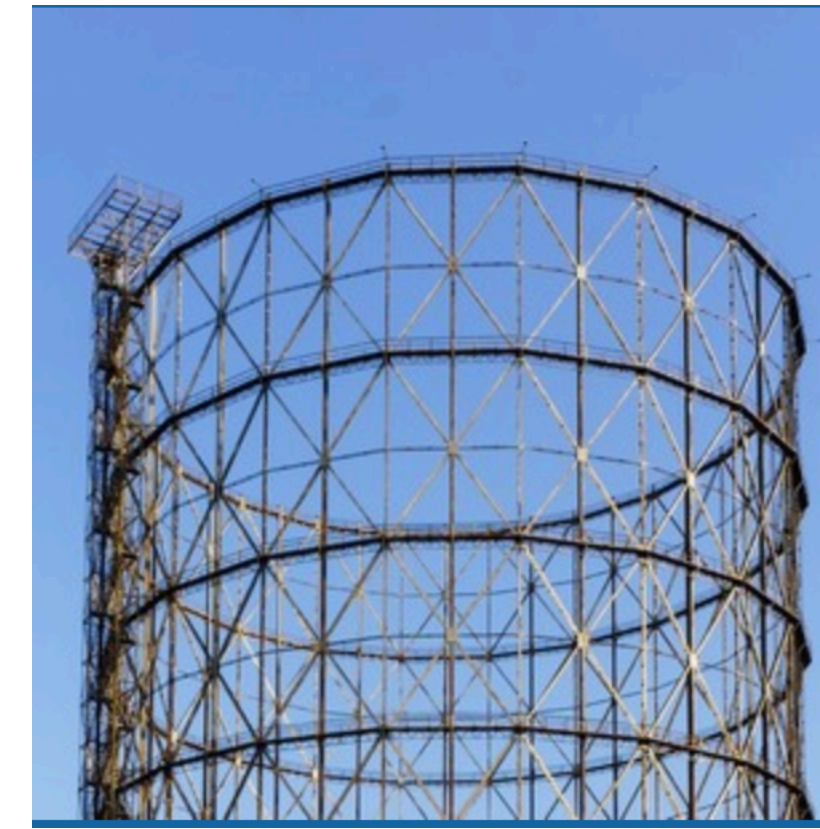
L. Galli, S. Giovannella

10/11/2023

cLFV in the intensity frontier



Wide and complementary zoology



cLFV searches

Process	Current bound on BR
$\mu \rightarrow e\gamma$	$< 4.2 \times 10^{-13}$
$\mu \rightarrow \bar{e}ee$	$< 1.0 \times 10^{-12}$
$\mu A \rightarrow eA$	$< 7 \times 10^{-13}$
$\tau \rightarrow l\gamma$	$< 3.3 \times 10^{-8}$
$\tau \rightarrow e\bar{e}e$	$< 2.7 \times 10^{-8}$
$\tau \rightarrow \mu\bar{\mu}\mu$	$< 2.1 \times 10^{-8}$
$\tau \rightarrow \mu\bar{e}e, e\bar{\mu}\mu$	$< 1.8, 2.7 \times 10^{-8}$
...	...
$\tau \rightarrow l\pi^0$	$< 8.0 \times 10^{-8}$
$\tau \rightarrow l\eta$	$< 6.5 \times 10^{-8}$
$\tau \rightarrow l\rho$	$< 1.2 \times 10^{-8}$
$K^0 \rightarrow \mu^\pm e^\mp$	$< 4.7 \times 10^{-12}$
$B_d^0 \rightarrow \tau^\pm \mu^\mp$	$< 1.2 \times 10^{-5}$
...	...
$h \rightarrow e^\pm \mu^\mp$	$< 6.1 \times 10^{-5}$
$h \rightarrow e^\pm \tau^\mp$	$< 2.2 \times 10^{-3}$
$h \rightarrow \tau^\pm \mu^\mp$	$< 1.5 \times 10^{-3}$
$Z \rightarrow e^\pm \mu^\mp$	$< 7.5 \times 10^{-7}$
$Z \rightarrow l^\pm \tau^\mp$	$< 10^{-7}$

Lepton Flavour Universality tests

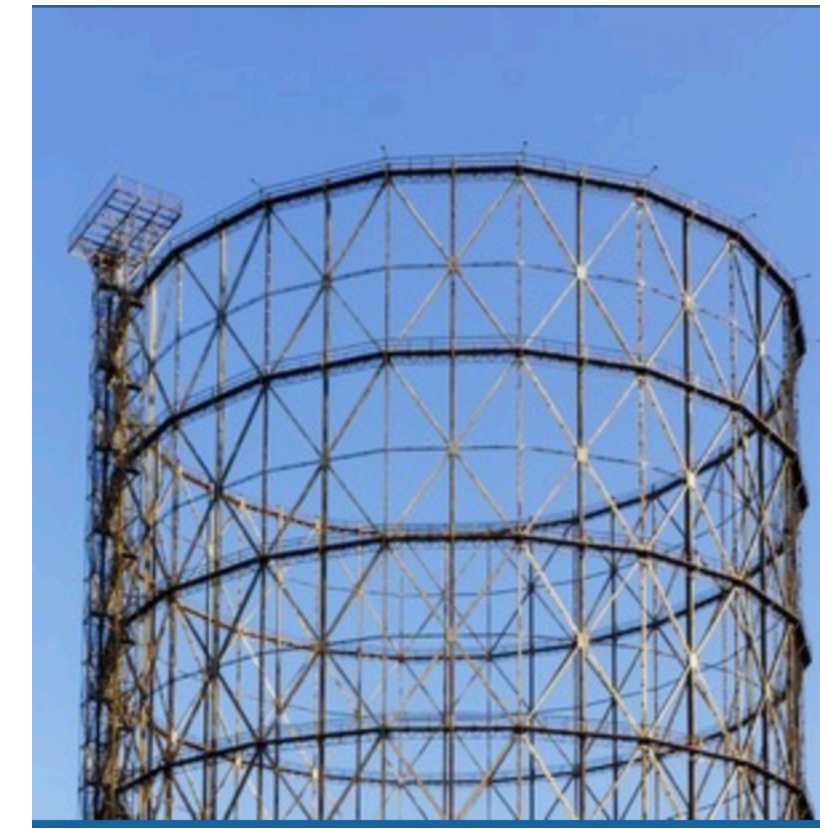
$$b \rightarrow sl^+l^- \quad R(K^{(*)})$$

$$b \rightarrow cl^+\nu_l \quad R(D^{(*)})$$

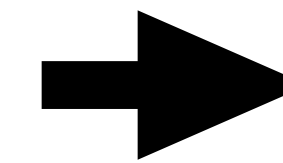
Experimental key features

- High intensity
- harsh background
- state of art detectors
- dedicated event selections and analysis techniques

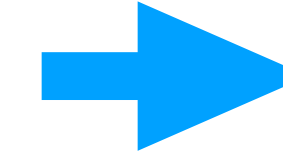
Summary



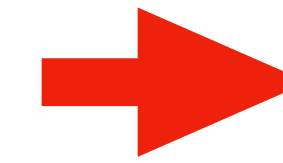
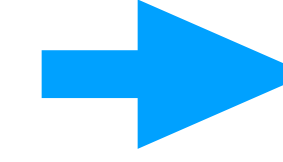
09:00	Introduction <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	<i>Luca Galli et al.</i> 09:00 - 09:10
	Theory introduction <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	<i>Marco Ardu</i> 09:10 - 09:35
	Status and perspectives of cLFV at MEG <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	<i>Antoine Venturini</i> 09:35 - 10:00
10:00	Status and perspectives of cLFV at Mu2e <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	<i>Eleonora Diociaiuti</i> 10:00 - 10:25
	Status and perspectives of LFV at ATLAS and CMS <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	<i>Caterina Aruta</i> 10:25 - 10:50
11:00	coffee break <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	10:50 - 11:20
	Lepton Flavour Universality tests at Belle II <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	<i>Giovanni Gaudino</i> 11:20 - 11:45
	Status and perspective of LFV at LHCb <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	<i>Flavio Archilli</i> 11:45 - 12:10
12:00	Perspective on cLFV with high intensity muon beams at PSI and FNAL <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	<i>Francesco Renga</i> 12:10 - 12:35
	Discussion <i>Aula Magna "Adalberto Libera", Dipartimento di Architettura dell'Università Roma Tre</i>	12:35 - 13:05
13:00		



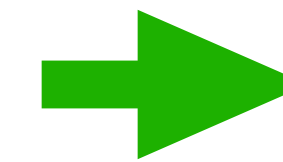
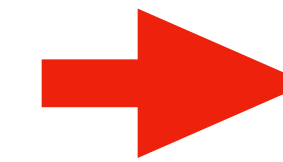
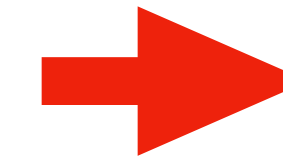
Theory overview



cLFV in μ



(c)LFV at colliders



Perspectives in μ searches