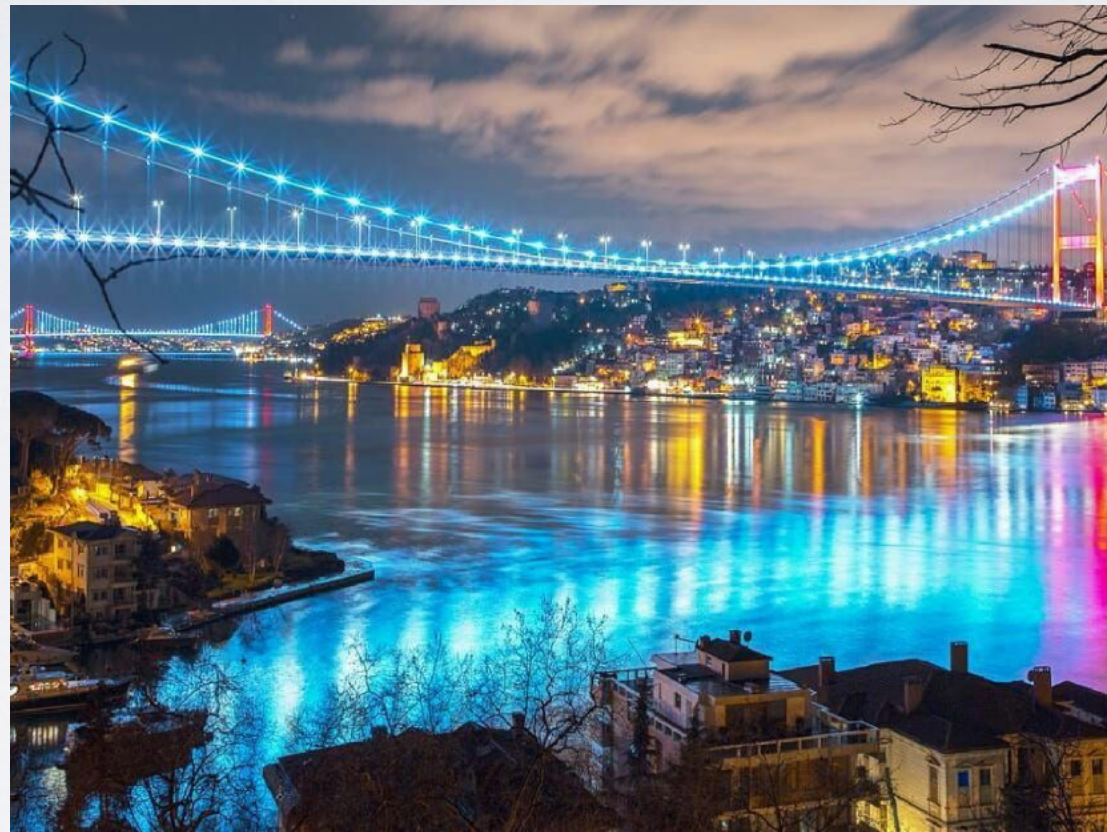


Plan for Joint 2021 VBScan Final Workshop — MBI 2021 in Bergamo/Milano

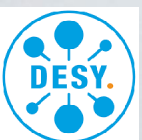


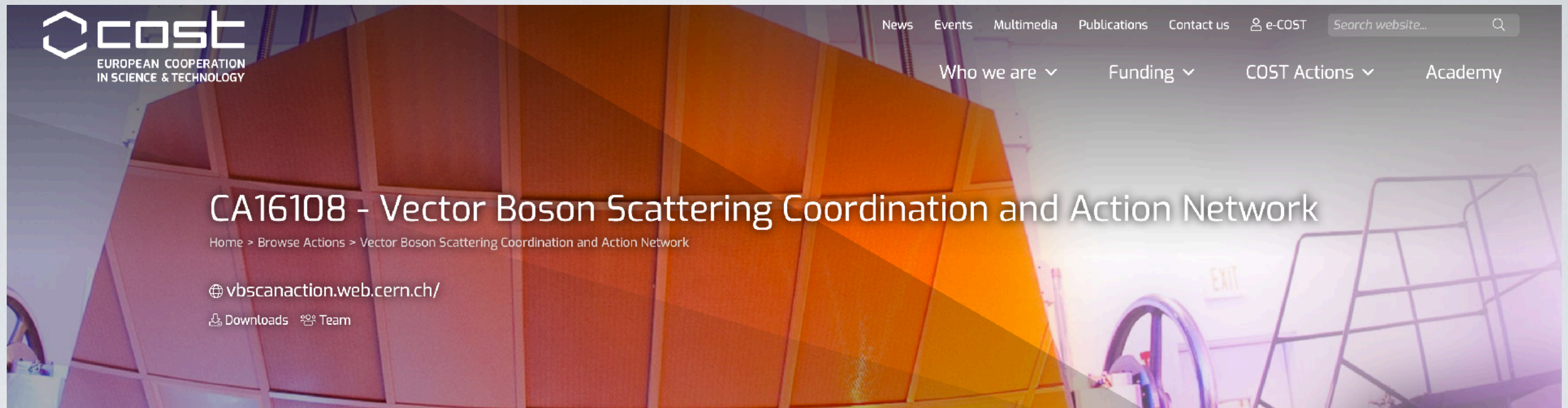
HELMHOLTZ
RESEARCH FOR GRAND CHALLENGES

Jürgen R. Reuter, DESY







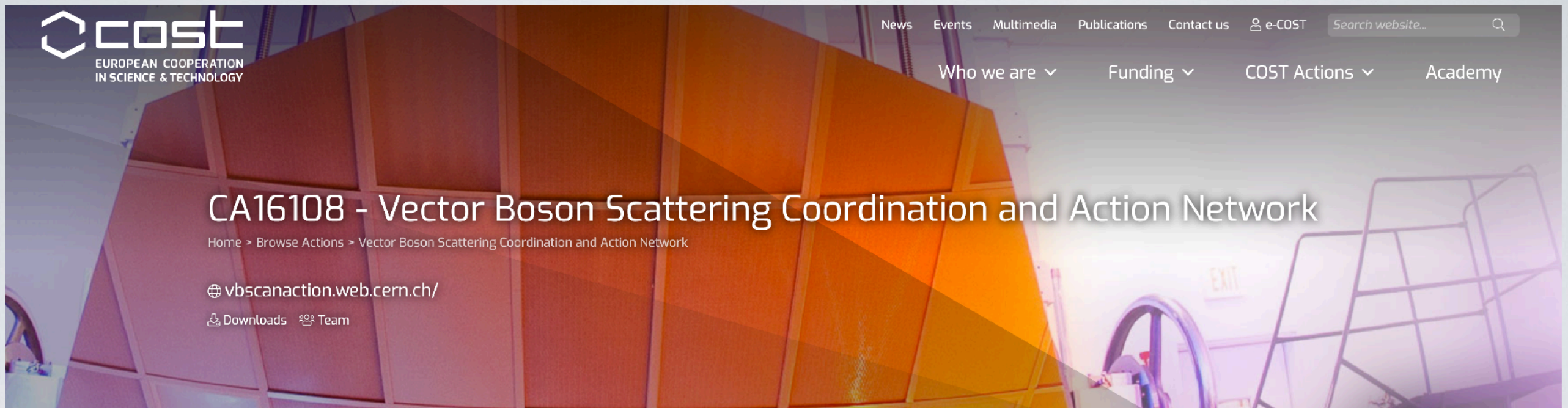


🌐 MBI 2015 conference at DESY, attended by Pietro Govoni

The screenshot shows a workshop website with a blue header and a white content area. On the left, there are navigation links: "Main workshope site", "Overview", and "Timetable". The main content area features the title "Participant List" and the text "Number of participants: 45". Below this, a table lists participants:

GOVONI, Pietro	LLR and Milano-Bicocca	Milano	Italy
----------------	------------------------	--------	-------





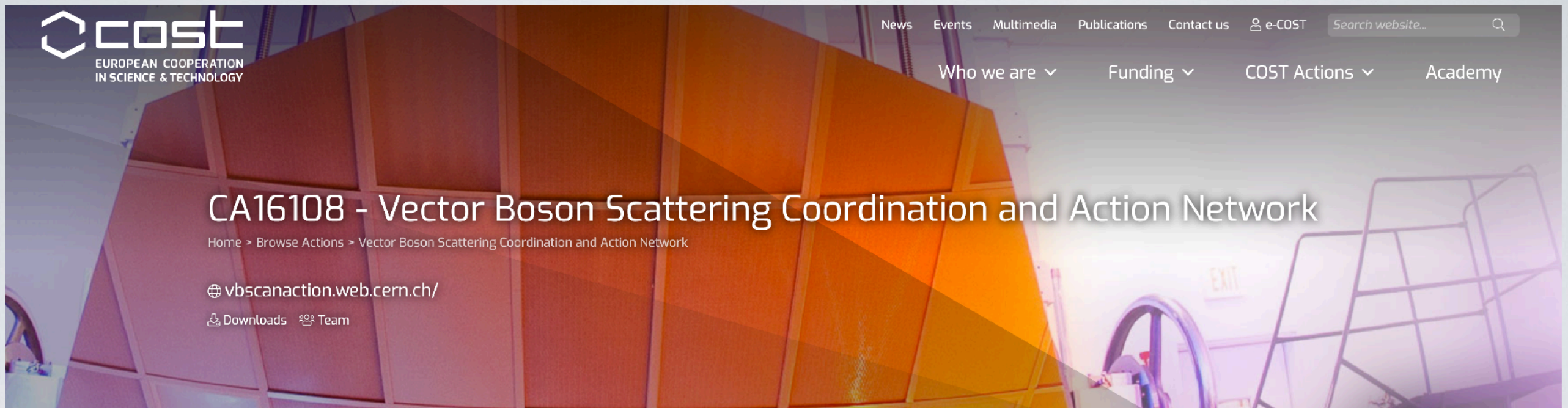
🌐 MBI 2015 conference at DESY, attended by Pietro Govoni

A screenshot of a workshop website. On the left, there is a sidebar with links: "Main workshop site", "Overview", and "Timetable". The main content area has the title "Participant List" and "Number of participants: 45". Below this, a table lists participants. The first entry is "GOVONI, Pietro" from "LLR and Milano-Bicocca".

Name	Affiliation
GOVONI, Pietro	LLR and Milano-Bicocca



VBScan COST Network Idea born from MBI

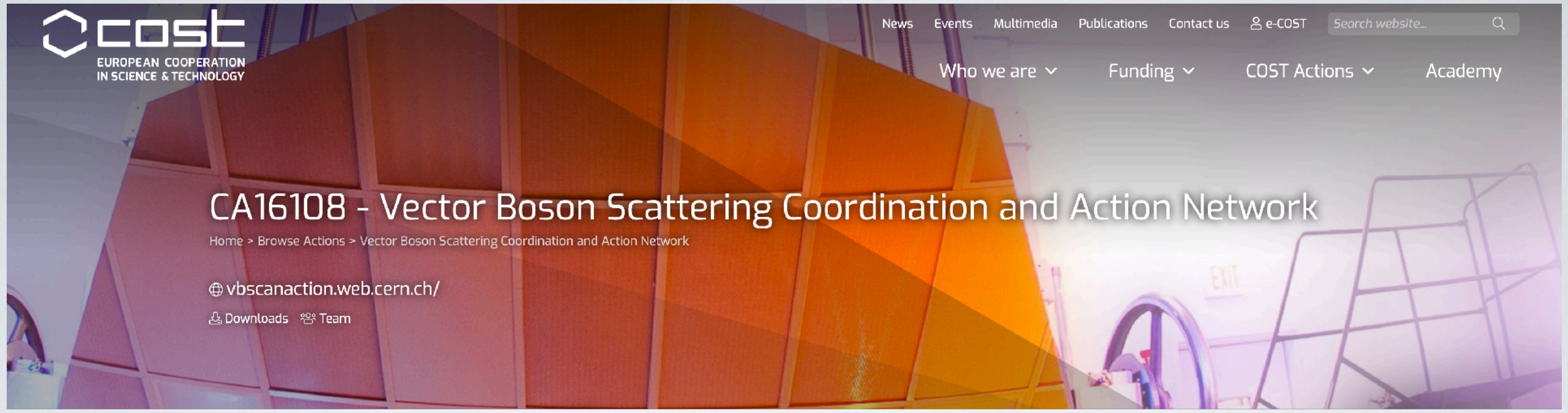


🌐 MBI 2015 conference at DESY, attended by Pietro Govoni

The screenshot shows a workshop website with a blue header. On the left, there are navigation links: "Main workshop site", "Overview", and "Timetable". The main content area is titled "Participant List" and indicates "Number of participants: 45". A table lists participants, with the first entry being "GOVONI, Pietro" from "LLR and Milano-Bicocca".



VBScan COST Network Idea born from MBI



🌐 MBI 2015 conference at DESY, attended by Pietro Govoni

A screenshot of a workshop website. On the left, there is a sidebar with links: 'Main workshop site', 'Overview', and 'Timetable'. The main content area has the title 'Participant List' and 'Number of participants: 45'. Below this, a table lists participants. The first entry is 'GOVONI, Pietro' from 'LLR and Milano-Bicocca'.

GOVONI, Pietro	LLR and Milano-Bicocca
----------------	------------------------



Pietro writes COST application!



- ▶ Original scope: anomalous quartic gauge couplings (idea: Michael Kobel, ATLAS)
- ▶ Workshop oscillated between Europe (Germany at beginning) and Americas (U.S.)
- ▶ That rule will be broken by MBI 2020 / might be broken in 2021

- ▶ Original scope: anomalous quartic gauge couplings (idea: Michael Kobel, ATLAS)
- ▶ Workshop oscillated between Europe (Germany at beginning) and Americas (U.S.)
- ▶ That rule will be broken by MBI 2020 / might be broken in 2021

1. MBI 2013 TU Dresden (chair: Michael Kobel, ATLAS) 47
2. MBI 2014 BNL (chair: Marc-Andre Pleier, ATLAS) 62
3. MBI 2015 DESY (chair: Jürgen Reuter, theory) 45
4. MBI 2016 UWisc. Madison (chair: Matt Herndon, CMS) 40
5. MBI 2017 KIT (chair: Dieter Zeppenfeld, theory) 62
6. MBI 2018 UMich. Ann Arbor (chair: Junjie Zhu, ATLAS) 40
7. MBI 2019 A-U. Thessaloniki (chair: Chara Petridou, ATLAS) ≥ 33
8. MBI 2020 T.D. Lee Inst. Shanghai (chair: Shu Li, ATLAS)
9. MBI 2021 ??? → Milano / Bergamo





Conference Series MBI (Multi-Boson Interactions)

4 / 9

- ▶ Original scope: anomalous quartic gauge couplings (idea: Michael Kobel, ATLAS)
- ▶ Workshop oscillated between Europe (Germany at beginning) and Americas (U.S.)
- ▶ That rule will be broken by MBI 2020 / might be broken in 2021

1. MBI 2013	TU Dresden (chair: Michael Kobel, ATLAS)	47
2. MBI 2014	BNL (chair: Marc-Andre Pleier, ATLAS)	62
3. MBI 2015	DESY (chair: Jürgen Reuter, theory)	45
4. MBI 2016	UWisc. Madison (chair: Matt Herndon, CMS)	40
5. MBI 2017	KIT (chair: Dieter Zeppenfeld, theory)	62
6. MBI 2018	UMich. Ann Arbor (chair: Junjie Zhu, ATLAS)	40
7. MBI 2019	A-U. Thessaloniki (chair: Chara Petridou, ATLAS)	≥ 33
8. MBI 2020	T.D. Lee Inst. Shanghai (chair: Shu Li, ATLAS)	
9. MBI 2021	??? → Milano / Bergamo	



MULTI-BOSON INTERACTIONS WORKSHOP

October 28-30, 2014 • Brookhaven National Laboratory • bnl.gov/mbi2014

TOPICS Multi-boson interactions in VBS, VBF, VVV & VV production
Theory status of SM processes
Experimental status of measurements
Anomalous couplings, EFT and BSM physics
Unitarization issues
Prospects at 13 TeV LHC and beyond
Monte Carlo generators

ORGANIZING COMMITTEE
John Campbell (FNAL)
Sally Dawson (BNL)
Lindsay Gray (FNAL)
Matthew Herndon (Univ. of Wisconsin)
Shih-Chieh Hsu (Univ. of Washington)

Barbara Jäger (Univ. of Tübingen)
Michael Kobel (TU Dresden)
Sabine Lammers (Indiana Univ.)
Hong Ma (BNL)
Yuri Maravin (Kansas State Univ.)

Marc-André Pleier (BNL)
Jürgen Reuter (DESY)
Anja West (TU Dresden)
Junjie Zhu (Univ. of Michigan)

WORKSHOP COORDINATOR
Linda Felerabend
felerabel@bnl.gov
631-344-4887



Conference Series MBI (Multi-Boson Interactions)

4 / 9

- ▶ Original scope: anomalous quartic gauge couplings (idea: Michael Kobel, ATLAS)
- ▶ Workshop oscillated between Europe (Germany at beginning) and Americas (U.S.)
- ▶ That rule will be broken by MBI 2020 / might be broken in 2021

1. MBI 2013 TU Dresden (chair: Michael Kobel, ATLAS) 47
2. MBI 2014 BNL (chair: Marc-Andre Pleier, ATLAS) 62
3. MBI 2015 DESY (chair: Jürgen Reuter, theory) 45
4. MBI 2016 UWisc. Madison (chair: Matt Herndon, CMS) 40
5. MBI 2017 KIT (chair: Dieter Zeppenfeld, theory) 62
6. MBI 2018 UMich. Ann Arbor (chair: Junjie Zhu, ATLAS) 40
7. MBI 2019 A-U. Thessaloniki (chair: Chara Petridou, ATLAS) ≥ 33
8. MBI 2020 T.D. Lee Inst. Shanghai (chair: Shu Li, ATLAS)
9. MBI 2021 ??? → Milano / Bergamo

Helmholtz Alliance
PHYSICS AT THE TERASCALE

PHYSICS AT THE TERA SCALE
Helmholtz Alliance

Deutsches Elektronen-Synchrotron DESY +++ Karlsruher Institut für Technologie - Großforschungsbereich +++ Max-Planck-Institut für Physik München +++ Rheinisch-Westfälische Technische Hochschule Aachen +++ Humboldt-Universität zu Berlin +++ Rheinische Friedrich-Wilhelms-Universität Bonn +++ Technische Universität Dortmund +++ Technische Universität Dresden +++ Albert-Ludwigs-Universität Freiburg +++ Justus-Liebig-Universität Gießen +++ Georg-August-Universität Göttingen +++ Universität Hamburg +++ Ruprecht-Karls-Universität Heidelberg +++ Karlsruher Institut für Technologie - Universitätsbereich +++ Johannes Gutenberg-Universität Mainz +++ Ludwig-Maximilians-Universität München +++ Universität Regensburg +++ Universität Rostock +++ Universität Siegen +++ Julius-Maximilians-Universität Würzburg +++ Bergische Universität Wuppertal +++

Multi-Boson Interactions (MBI) 2015
2-4 September 2015
DESY, Hamburg

Topics:

- Status of NLO/NNLO (QCD/EW) for V+jets, VV(+jets), VV scattering, Vector boson fusion
- Electroweak Sudakovs and showers
- Higgs Effective Field Theory
- Unitarization: methods/resonances/coupled channels
- Models (SUSY, composite, extra-dimensions)
- Monte Carlos and other Tools
- Electroweak Precision Tests

Organising Committee:
Christophe Grojean (DESY), Michael Kobel (TU Dresden),
Kristin Lohwasser (DESY), Isabell Melzer-Pellmann (DESY),
Jürgen Reuter (DESY, chair), Peter Schlexer (Hamburg U.),
Thomas Schoerner-Sadenius (DESY), Anja Vest (TU Dresden)

Registration deadline: 15 August 2015
Please register at the workshop webpage:
<http://mbi2015.desy.de>



Conference Series MBI (Multi-Boson Interactions)

- ▶ Original scope: anomalous quartic gauge couplings (idea: Michael Kobel, ATLAS)
- ▶ Workshop oscillated between Europe (Germany at beginning) and Americas (U.S.)
- ▶ That rule will be broken by MBI 2020 / might be broken in 2021

1. MBI 2013	TU Dresden (chair: Michael Kobel, ATLAS)	47
2. MBI 2014	BNL (chair: Marc-Andre Pleier, ATLAS)	62
3. MBI 2015	DESY (chair: Jürgen Reuter, theory)	45
4. MBI 2016	UWisc. Madison (chair: Matt Herndon, CMS)	40
5. MBI 2017	KIT (chair: Dieter Zeppenfeld, theory)	62
6. MBI 2018	UMich. Ann Arbor (chair: Junjie Zhu, ATLAS)	40
7. MBI 2019	A-U. Thessaloniki (chair: Chara Petridou, ATLAS)	≥ 33
8. MBI 2020	T.D. Lee Inst. Shanghai (chair: Shu Li, ATLAS)	
9. MBI 2021	??? → Milano / Bergamo	

Helmholtz Alliance
PHYSICS AT THE TERASCALE

Multi-Boson Interactions (MBI) 2017
 28 - 30 August 2017
 KIT, Karlsruhe

Topics:

- Diboson and triboson production
- Vector boson scattering and vector boson fusion
- Precision calculation and measurement of multiboson production
- New Physics in multi boson production:
 - Models
 - Simplified models
 - Anomalous couplings
 - Effective field theory
- Monte Carlo Generators
- 13 TeV LHC Run 2 results and beyond

Organizing Committee:
 John Campbell (FAL), Sally Dawson (DAL), Lindsey Gray (NAL),
 Christoph Greife (DESY), Tao Han (Pittsburgh),
 Matthew Herndon (UW Madison), Barbara Jäger (U. Bielefeld),
 Michael Kobel (TU Dresden), Sabine Lammers (Indiana U.),
 Yuli Maravin (Kansas State U.), Matthias Møzer (KIT),
 Thomas Müller (KIT), Marc-André Pleier (BNL), Günter Quast (KIT),
 Michael Rauch (KIT), Jürgen Reuter (DESY), Marco Sekula (KIT),
 Dieter Zeppenfeld (KIT), Junjie Zhu (U. Michigan)

Please register via the workshop page.
 For more details and to register see:
<http://mbi2017.particle.kit.edu>

Registration deadline: 14.08.2017



Conference Series MBI (Multi-Boson Interactions)

4 / 9

- ▶ Original scope: anomalous quartic gauge couplings (idea: Michael Kobel, ATLAS)
- ▶ Workshop oscillated between Europe (Germany at beginning) and Americas (U.S.)
- ▶ That rule will be broken by MBI 2020 / might be broken in 2021

1.	MBI 2013	TU Dresden (chair: Michael Kobel, ATLAS)	47
2.	MBI 2014	BNL (chair: Marc-Andre Pleier, ATLAS)	62
3.	MBI 2015	DESY (chair: Jürgen Reuter, theory)	45
4.	MBI 2016	UWisc. Madison (chair: Matt Herndon, CMS)	40
5.	MBI 2017	KIT (chair: Dieter Zeppenfeld, theory)	62
6.	MBI 2018	UMich. Ann Arbor (chair: Junjie Zhu, ATLAS)	40
7.	MBI 2019	A-U. Thessaloniki (chair: Chara Petridou, ATLAS)	≥ 33
8.	MBI 2020	T.D. Lee Inst. Shanghai (chair: Shu Li, ATLAS)	
9.	MBI 2021	??? → Milano / Bergamo	

Multi-Boson Interactions (MBI) 2018
August 28-30, 2018
<http://cern.ch/mbi2018>
University of Michigan
Ann Arbor, MI, USA

Topics:

- Diboson and triboson production
- Higgs production
- Vector boson scattering and vector boson fusion
- Precision calculation and measurement of multiboson production
- New physics in multiboson production
- Monte Carlo generators
- LHC Run 2 results and beyond

Program committee:

John Campbell (FNAL), Sally Dawson (BNL), Lindsey Gray (FNAL), Christophe Grojean (DESY), Tao Han (U Pittsburgh), Matthew Herndon (UW Madison), Barbara Jäger (U Tübingen), Michael Kobel (TU Dresden), Sabine Lammers (Indiana U), Yurii Maravin (KSU), Marc-André Pleier (BNL), Aaron Pierce (Michigan), Jianming Qian (Michigan), Jürgen Reuter (DESY), James Wells (Michigan), Bing Zhou (Michigan), Junjie Zhu (Michigan)



Conference Series MBI (Multi-Boson Interactions)

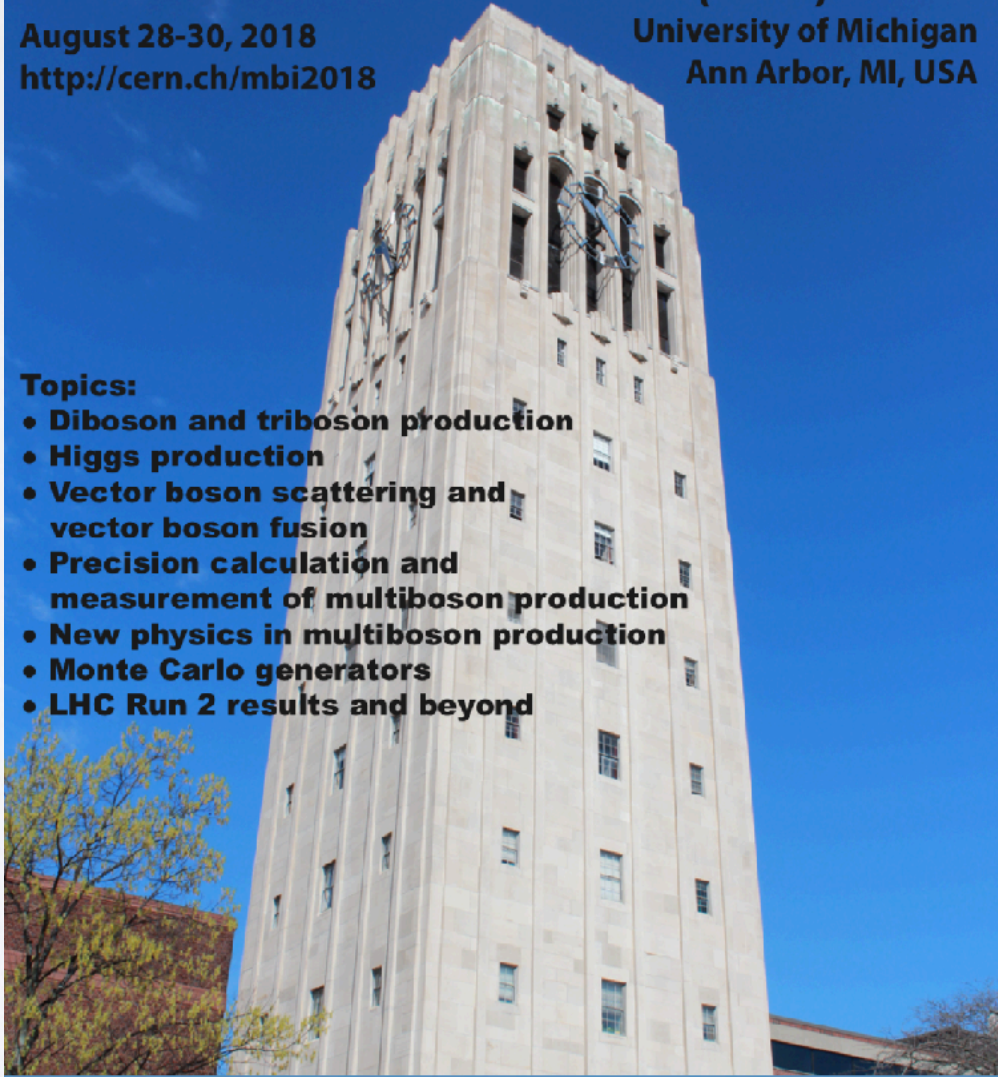
- ▶ Original scope: anomalous quartic gauge couplings (idea: Michael Kobel, ATLAS)
- ▶ Workshop oscillated between Europe (Germany at beginning) and Americas (U.S.)
- ▶ That rule will be broken by MBI 2020 / might be broken in 2021

1. MBI 2013	TU Dresden (chair: Michael Kobel, ATLAS)	47
2. MBI 2014	BNL (chair: Marc-Andre Pleier, ATLAS)	62
3. MBI 2015	DESY (chair: Jürgen Reuter, theory)	45
4. MBI 2016	UWisc. Madison (chair: Matt Herndon, CMS)	40
5. MBI 2017	KIT (chair: Dieter Zeppenfeld, theory)	62
6. MBI 2018	UMich. Ann Arbor (chair: Junjie Zhu, ATLAS)	40
7. MBI 2019	A-U. Thessaloniki (chair: Chara Petridou, ATLAS)	≥ 33
8. MBI 2020	T.D. Lee Inst. Shanghai (chair: Shu Li, ATLAS)	
9. MBI 2021	??? → Milano / Bergamo	

Aug.	[24-26; 26-28; 28-30; 28-30]	4
Sep.	[2-4; 30 - Oct. 2]	2
Oct.	[28-30]	1

Multi-Boson Interactions (MBI) 2018

August 28-30, 2018 University of Michigan
<http://cern.ch/mbi2018> Ann Arbor, MI, USA



Topics:

- Diboson and triboson production
- Higgs production
- Vector boson scattering and vector boson fusion
- Precision calculation and measurement of multiboson production
- New physics in multiboson production
- Monte Carlo generators
- LHC Run 2 results and beyond

Program committee:

John Campbell (FNAL), Sally Dawson (BNL), Lindsey Gray (FNAL), Christophe Grojean (DESY),
 Tao Han (U Pittsburgh), Matthew Herndon (UW Madison), Barbara Jäger (U Tübingen),
 Michael Kobel (TU Dresden), Sabine Lammers (Indiana U), Yurii Maravin (KSU),
 Marc-André Pleier (BNL), Aaron Pierce (Michigan), Jianming Qian (Michigan),
 Jürgen Reuter (DESY), James Wells (Michigan), Bing Zhou (Michigan), Junjie Zhu (Michigan)



Conference Series MBI (Multi-Boson Interactions)

- ▶ Original scope: anomalous quartic gauge couplings (idea: Michael Kobel, ATLAS)
- ▶ Workshop oscillated between Europe (Germany at beginning) and Americas (U.S.)
- ▶ That rule will be broken by MBI 2020 / might be broken in 2021

1. MBI 2013	TU Dresden (chair: Michael Kobel, ATLAS)	47
2. MBI 2014	BNL (chair: Marc-Andre Pleier, ATLAS)	62
3. MBI 2015	DESY (chair: Jürgen Reuter, theory)	45
4. MBI 2016	UWisc. Madison (chair: Matt Herndon, CMS)	40
5. MBI 2017	KIT (chair: Dieter Zeppenfeld, theory)	62
6. MBI 2018	UMich. Ann Arbor (chair: Junjie Zhu, ATLAS)	40
7. MBI 2019	A-U. Thessaloniki (chair: Chara Petridou, ATLAS)	≥ 33
8. MBI 2020	T.D. Lee Inst. Shanghai (chair: Shu Li, ATLAS)	
9. MBI 2021	??? → Milano / Bergamo	

Aug.	[24-26; 26-28; 28-30; 28-30]	4
Sep.	[2-4; 30 - Oct. 2]	2
Oct.	[28-30]	1

Multi-Boson Interactions (MBI) 2018
 August 28-30, 2018
<http://cern.ch/mbi2018>
 University of Michigan
 Ann Arbor, MI, USA

Topics:

- Diboson and triboson production
- Higgs production
- Vector boson scattering and vector boson fusion
- Precision calculation and measurement of multiboson production
- New physics in multiboson production
- Monte Carlo generators
- LHC Run 2 results and beyond

Program co-chairs:
 John Campbell (FNAL), Christophe Grojean (DESY),
 Tao Han (U Michigan), Barbara Jäger (U Tübingen),
 Michael Kobel (Michigan), Yurii Maravin (KSU),
 Marc-André Pleier (Michigan), Jianming Qian (Michigan),
 Jürgen Reuter (Michigan), Bing Zhou (Michigan), Junjie Zhu (Michigan)

*mostly August
clear lack of CMS chairs*

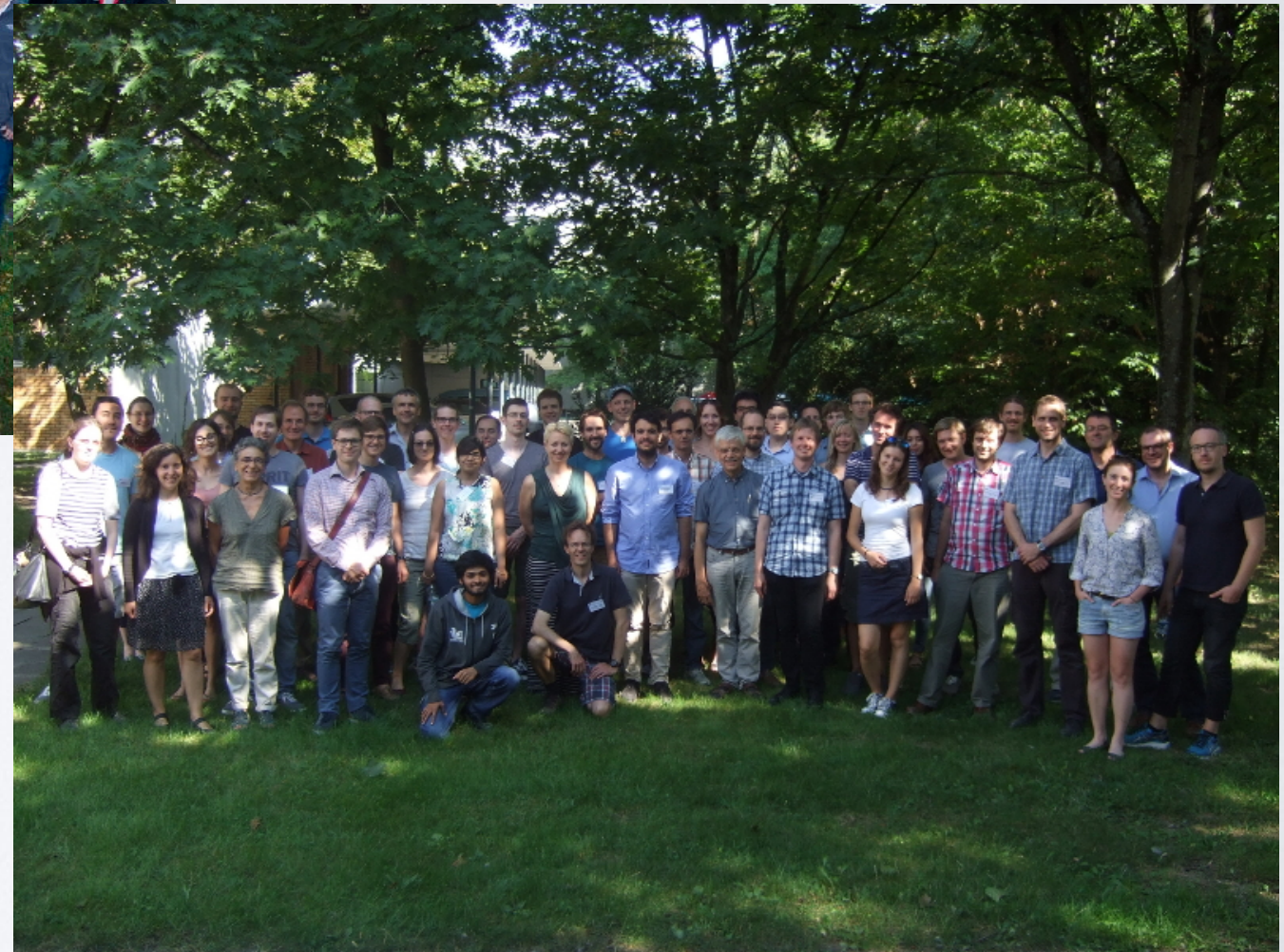


Great Topics (Experiment vs. Theory Balance)

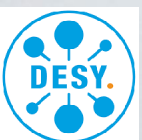
5 / 9



- Most concise experimental overview
- Very dedicated theory talks
- **Multitudes of interesting discussions**



- Dibosons, tribosons, VBF, VBS
- Precision theory predictions (QCD / EW)
- Resummation, boosted regime
- Unitarization, EFT validity, BSM connection
- Exp. techniques, polarization, combination

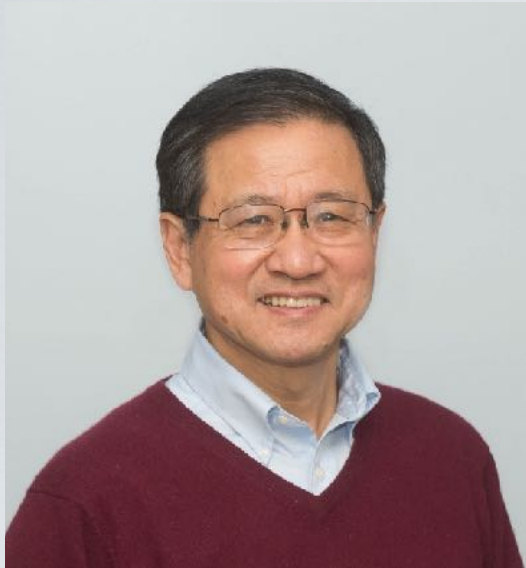


Tradition of (very) high-level summary speaker

6 / 9



Tradition of (very) high-level summary speaker



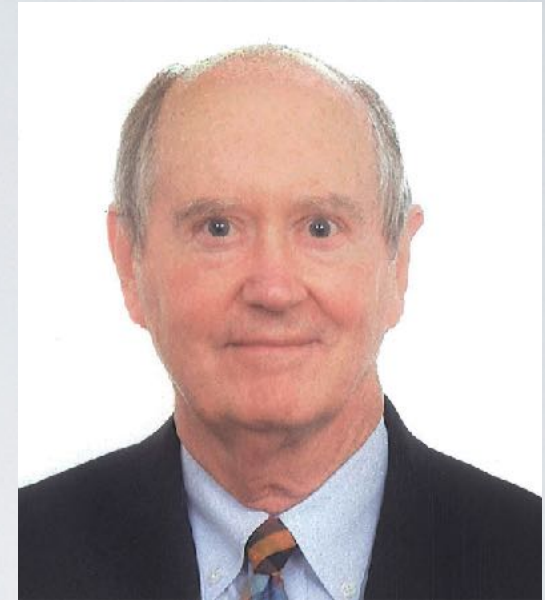
MBI 2013: Tao Han



MBI 2014: Sally Dawson



MBI 2015: Christophe Grojean



MBI 2016: Chris Quigg



MBI 2017: Dieter Zeppenfeld



MBI 2018: Sekhar Chivukula

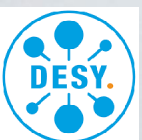


MBI 2019: Athanasios Dedes

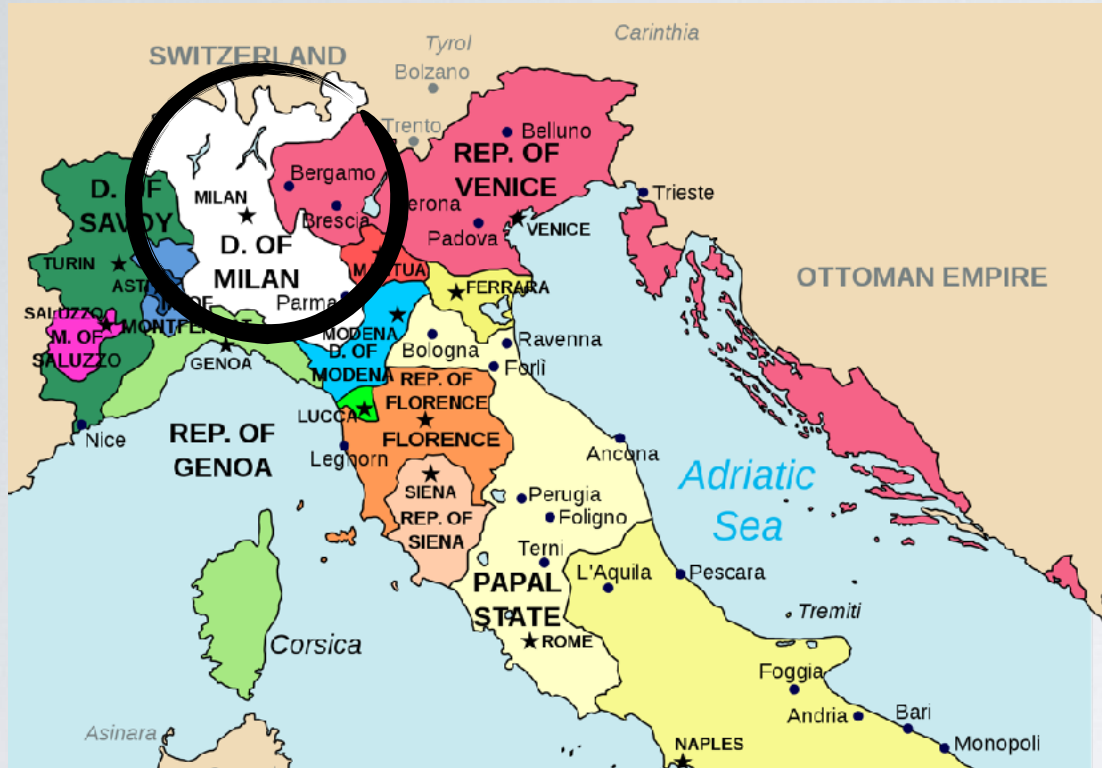
Proposal: Joint VBScan Final Meeting / MBI 2021

7 / 9

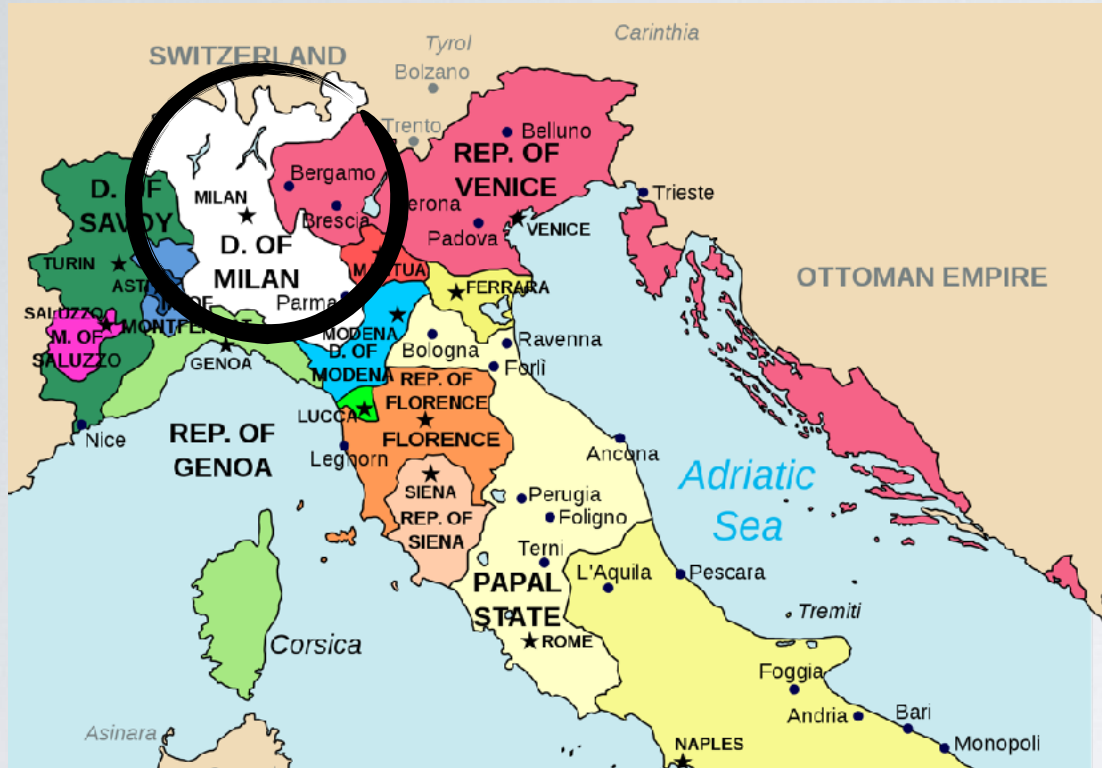
- ☑ Pietro Govoni proposed to combine final VBScan Meeting with MBI 2021
- ☑ “back to the roots”
- ☑ Both events would grossly benefit from this
 - Overlapping, but partially exclusive communities (U.S. / Asia) \implies greater attendance
 - Some MBI participants could benefit from COST budget
 - MBI conference broadens the scope of the VBScan Final Meeting
 - Extra activities (outreach, connectivity) broaden the scope of the MBI conference
- ☑ MBI International Advisory Board reacted very positive
- ☑ MBI IAB U.S. members to shift U.S. 2021 workshop to Europe (Run 3 preparations!)
- ☑ MBI IAB grants flexibility of time slot [also not yet clear which month MBI 2020 Shanghai]
- ☑ most likely late spring or early summer is possible compared to “traditional” August slot
- ☑ possibly needs a (small) prolongation of the action \implies Pietro Govoni



Possible Locations: Milano or Bergamo



Possible Locations: Milano or Bergamo



- 📍 Milano: strong physics group (CMS, POWHEG)
- 📍 Milano: world renowned opera
- 📍 Bergamo [Berghèm]: scenic place
- 📍 Bergamo: renowned for food (Polenta)
historic connection to *commedia dell'arte*



Possible Locations: Milano or Bergamo



- Milano: strong physics group (CMS, POWHEG)
- Milano: world renowned opera
- Bergamo [Berghèm]: scenic place
- Bergamo: renowned for food (Polenta)

historic connection to *commedia dell'arte*

VBScan Final Meeting ⊗ MBI 2021

“La commedia è finita!”



*“Cercherò lontana terra,
dove gemer sconosciuto!”*



No conclusion

9 / 9

“Incominciate”

