



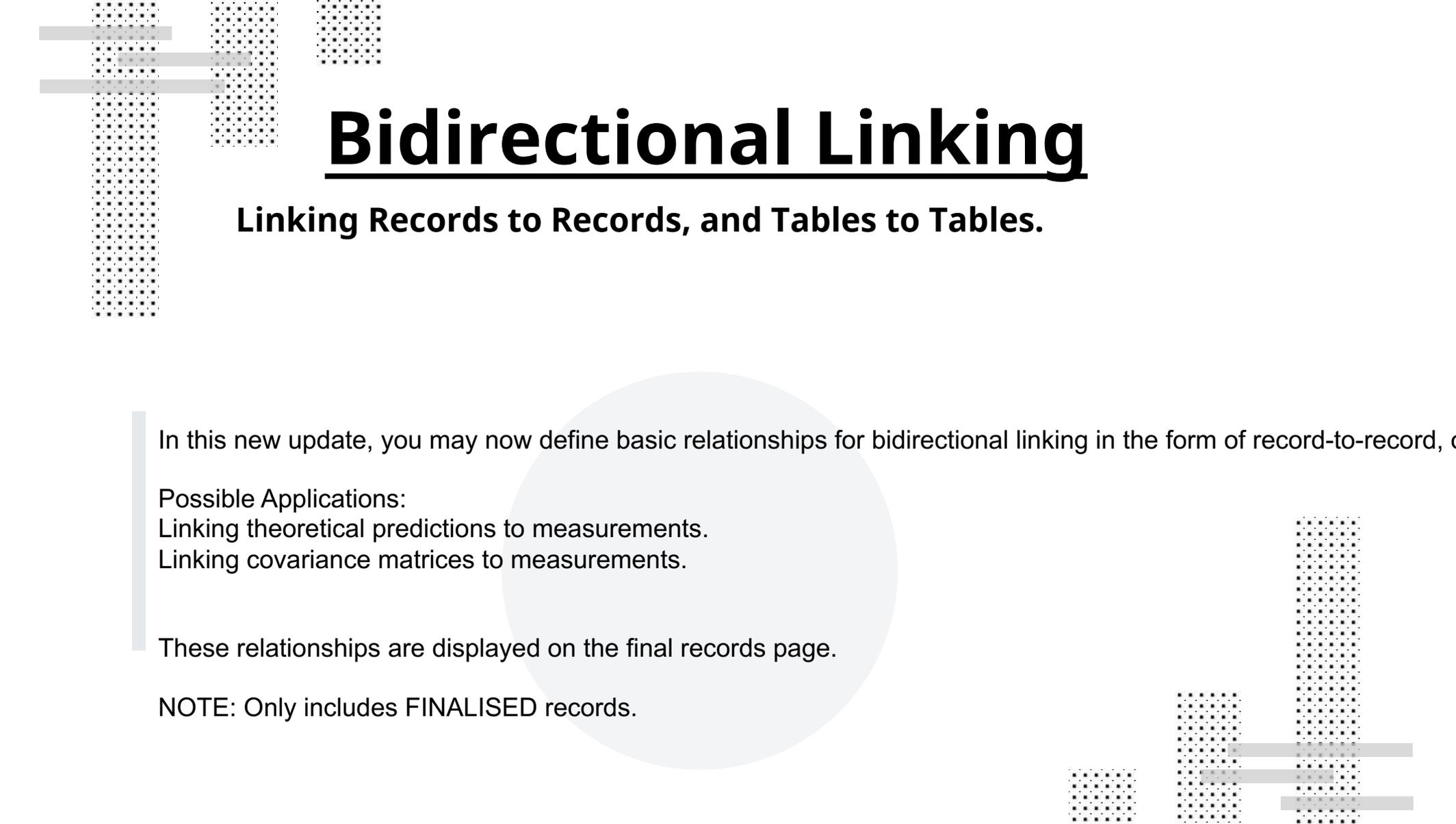
Bidirectional Linking in HEPData

HEPData.net

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Bidirectional Linking

Linking Records to Records, and Tables to Tables.

In this new update, you may now define basic relationships for bidirectional linking in the form of record-to-record, or table-to-table.

Possible Applications:

Linking theoretical predictions to measurements.

Linking covariance matrices to measurements.

These relationships are displayed on the final records page.

NOTE: Only includes FINALISED records.

Example Record - #321

Example record displaying bidirectional relation data.



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[Author, T](#) Accessed 12 times [Cite](#) [Watch Record](#) [JSON](#)

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Example Submission

Author, T

Eur.Phys.J.C 74 (2014) 3157, ...

<https://doi.org/10.17182/hepdata.321>

This record is related to:

- [72886](#)

This record is referred to by:

- [12882](#)

Abstract (data abstract)
CERN-LHC. Measurements of the cross section for ZZ production using the 4l and 2l2nu decay channels in proton-proton collisions at a centre-of-mass energy of 7 TeV with 4.6 fb⁻¹ of data collected in 2011. The final states used are 4 electrons, 4 muons, 2 electrons and 2 muons, 2 electrons and missing transverse momentum, and 2 muons and missing transverse momentum (MET).

The cross section values reported in the tables should be multiplied by a factor of 1.0141 to take into account the updated value of the integrated luminosity for the ATLAS 2011 data taking period. The uncertainty on the global normalisation ("Lumi") remains at 1.8%. See Eur.Phys.J. C73 (2013) 2518 for more details.

The 4l channel fiducial region is defined as:
- 4e, 4mu or 2e2mu
- Ambiguities in pairing are resolved by choosing the combination that results in the

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Filter 8 data tables

Table 1 [10.17182/hepdata.321.v1/t1](#)

Data from Page 17 of preprint
10.17182/hepdata.321.v1/t1

The measured fiducial cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding luminosity, the second is the...

Table 2 [10.17182/hepdata.321.v1/t2](#)

Data from Page 20 of preprint
10.17182/hepdata.321.v1/t2

The measured total cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding luminosity, the second is the...

Table 3 [10.17182/hepdata.321.v1/t3](#)

Data from Figure 8A
10.17182/hepdata.321.v1/t3

Normalized ZZ fiducial cross section (multiplied by 10⁻⁶ for readability) in values of the leading reconstructed dilepton pT for the...

Table 4 [10.17182/hepdata.321.v1/t4](#)

Data from Figure 8B
10.17182/hepdata.321.v1/t4

Normalized ZZ fiducial cross section (multiplied by 10⁻⁶ for readability) in values of the dilepton pT for the 2l2nu channel...

Table 5 [10.17182/hepdata.321.v1/t5](#)

Data from Figure 9A
10.17182/hepdata.321.v1/t5

Normalized ZZ fiducial cross section (multiplied by 10⁻⁶ for readability) in values of deltaPhi between the two leptons of the...

Table 6 [10.17182/hepdata.321.v1/t6](#)

Data from Figure 9B

Table 1 [10.17182/hepdata.321.v1/t1](#)

Data from Page 17 of preprint

This table is related to:

- [10.17182/hepdata.72886.v2/t5](#)

This table is referred to by:

- [10.17182/hepdata.12882.v1/t9](#)

The measured fiducial cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding luminosity, the second is the luminosity

Resources <https://www.hepdata.net/r> [JSON](#)

cmenergies

observables

phrases

reactions

RE	P P -> Z0 < LEPTON+ LEPTON- > Z0 < LEPTON+ LEPTON- > X	P P -> Z0 < LEPTON+ LEPTON- > Z0* < LEPTON+ LEPTON- > X	P P -> Z0 < LEPTON+ LEPTON+ LEPTON- > Z0 < NU NUBAR > X
SQRT(S)	7000 GEV		
SIG(fiducial) [FB]			
	25.4 ^{+3.8} _{-3.2} ^{stat} ^{+1.2} _{-1.2} ^{syst} ^{+1.0} _{-1.0} ^{Lumi}	29.8 ^{+4.8} _{-3.8} ^{stat} ^{+1.2} _{-1.2} ^{syst} ^{+1.0} _{-1.0} ^{Lumi}	12.7 ^{+3.1} _{-2.3} ^{stat} ^{+1.7} _{-1.7} ^{syst} ^{+1.0} _{-1.0} ^{Lumi}

Visualize



Sum errors Log Scale (X) Log Scale (Y)

Record Linking

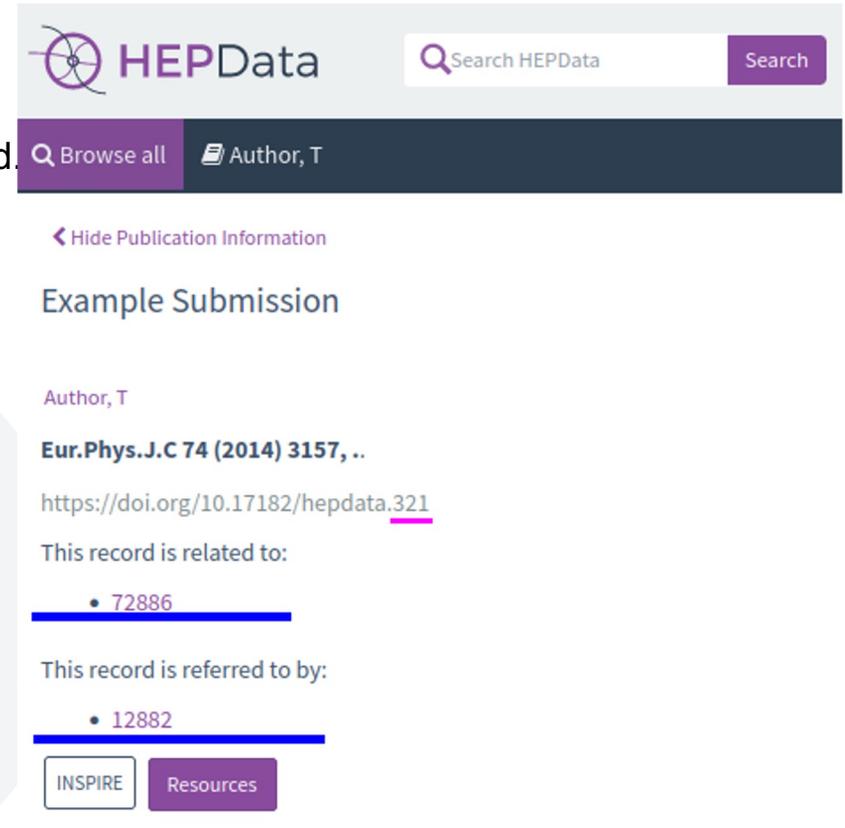
NOTE: *The HEPData record ID is underlined in pink.*

Relations

- A list of all records that this record has defined as related.

Referring to this

- A list of all FINALISED records that refer to this record.



The screenshot shows the HEPData website interface. At the top, there is a navigation bar with the HEPData logo on the left, a search bar with the text "Search HEPData" and a "Search" button on the right, and a secondary navigation bar with "Browse all" and "Author, T" options. Below the navigation bar, there is a link to "Hide Publication Information" and a section titled "Example Submission". Under "Example Submission", the text "Author, T" is followed by "Eur.Phys.J.C 74 (2014) 3157, .." and a DOI link "https://doi.org/10.17182/hepdata.321" where the ID "321" is underlined in pink. Below this, there are two sections: "This record is related to:" with a bullet point "72886" underlined in blue, and "This record is referred to by:" with a bullet point "12882" underlined in blue. At the bottom of the interface, there are two buttons: "INSPIRE" and "Resources".

Record Linking

Submission.yaml

Comma separated values

```
related_to_hepdata_records: [ 72886 ]  
related_to_hepdata_records: [ 72886, 12882 ]
```

Entries on new line, starting with a dash

```
related_to_hepdata_records:  
- 72886  
  
related_to_hepdata_records:  
- 72886  
- 12882
```

Table Linking

Download All ▾

Filter 8 data tables

Table 1

Data from Page 17 of preprint

10.17182/hepdata.321.v1/t1

The measured fiducial cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding luminosity, the second is the...

Table 2

Data from Page 20 of preprint

10.17182/hepdata.321.v1/t2

The measured total cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding luminosity, the second is the...

Table 1 [10.17182/hepdata.321.v1/t1](https://doi.org/10.17182/hepdata.321.v1/t1)

Data from Page 17 of preprint

This table is related to:

- [10.17182/hepdata.72886.v2/t5](https://doi.org/10.17182/hepdata.72886.v2/t5)

This table is referred to by:

- [10.17182/hepdata.12882.v1/t9](https://doi.org/10.17182/hepdata.12882.v1/t9)

The measured fiducial cross sections. The second is the luminosity

cmenergies

7000.0

Relations

- A list of all records that this record has defined a

Referring to this

- A list of all FINALISED records that refer to this record

Table Linking

Submission.yaml

Format: "10.17182/hepdata.[Record ID].v[Version]/t[Table]"

Example: "10.17182/hepdata.72886.v2/t5"]

Comma separated values

```
related_to_table_dois: ["10.17182/hepdata.72886.v2/t5"]
```

```
related_to_table_dois: ["10.17182/hepdata.72886.v2/t5", "10.17182/hepdata.12882.v1/t9"]
```

Entries on new line, starting with a dash.

```
related_to_table_dois:  
  - "10.17182/hepdata.72886.v2/t5"
```

```
related_to_table_dois:  
  - "10.17182/hepdata.72886.v2/t5"  
  - "10.17182/hepdata.12882.v1/t9"
```

Submission.yaml Example

This is an example snippet of a submission.yaml showing how one of the previous examples can be used.

```
---
additional_resources: # additional references (e.g. experiment TWiki page for analysis)
  - {location: "http://atlas.web.cern.ch/Atlas/GROUPS/PHYSICS/PAPERS/STDM-2012-02/", description: "web page with auxiliary material"}

comment: | # preserve newlines
  CERN-LHC. Measurements of the cross section for ZZ production using the 4l and 2l2nu decay channels in proton-proton collisions at
  muons, 2 electrons and missing transverse momentum, and 2 muons and missing transverse momentum (MET).

  The cross section values reported in the tables should be multiplied by a factor of 1.0141 to take into account the updated value of
  Eur.Phys.J. C73 (2013) 2518 for more details.

  The 4l channel fiducial region is defined as:
  - 4e, 4mu or 2e2mu
  - Ambiguities in pairing are resolved by choosing the combination that results in the smaller value of the sum  $|m_{ll} - m_Z|$  for the two
  -  $p_{TLepton} > 7$  GeV (at least one with  $p_{TLepton} > 20$  (25) GeV for muons (electrons))
  -  $|\eta_{Lepton}| < 3.16$ 
  - At least one lepton pair is required to have invariant mass between 66 and 116 GeV. If the second pair also satisfies this, the event
  -  $\min(\Delta R(l, l)) > 0.2$ .

  The 2l2nu channel fiducial region is defined as:
  - 2e+MET or 2mu+MET
  -  $p_{TLepton} > 20$  GeV
  -  $|\eta_{Lepton}| < 2.5$ 
  -  $m_{ll}$  must be between 76 and 106 GeV
  -  $-\text{MET} \cdot \cos(\phi_{METZ}) > 75$  GeV, where  $\phi_{METZ}$  is the angle between the Z and the MET
  -  $|\text{MET} - p_{TZ}| / p_{TZ} < 0.4$ , where  $p_{TZ}$  is the transverse momentum of the dilepton system
  - No events with a jet for which  $p_{TJet} > 25$  GeV and  $|\eta_{Jet}| < 4.5$ 
  - No events with a third lepton for which  $p_{TLepton} > 10$  GeV
  -  $\min(\Delta R(l, l)) > 0.3$ 

related_to_hepdata_records: [ 72886, 12882 ]

---
# Start a new YAML document to indicate a new data table.
# This is Table 1.
name: "Table 1"
location: Data from Page 17 of preprint
related_to_table_dois: [ "10.17182/hepdata.72886.v2/t5", "10.17182/hepdata.12882.v1/t9" ]
description: The measured fiducial cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding
```

Submission.yaml Example

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  The cross section values reported in the tables should be multiplied by a factor of 1.0141 to take into account the updated value of
  Eur.Phys.J. C73 (2013) 2518 for more details.

  The 4l channel fiducial region is defined as:
  - 4e, 4mu or 2e2mu
  - Ambiguities in pairing are resolved by choosing the combination that results in the smaller value of the sum |mll - mZ| for the two
  - ptLepton > 7 GeV (at least one with ptLepton > 20 (25) GeV for muons (electrons))
  - |etaLepton| < 3.16
  - At least one lepton pair is required to have invariant mass between 66 and 116 GeV. If the second pair also satisfies this, the event
  - min(DeltaR(l,l)) > 0.2.

  The 2l2nu channel fiducial region is defined as:
  - 2e+MET or 2mu+MET
  - ptLepton > 20 GeV
  - |etaLepton| < 2.5
  - mll must be between 76 and 106 GeV
  - -MET*cos(phi_METZ)>75 GeV, where phi_METZ is the angle between the Z and the MET
  - |MET - pTZ| / pTZ < 0.4, where pTZ is the transverse momentum of the dilepton system
  - No events with a jet for which ptJet > 25 GeV and |etaJet| < 4.5
  - No events with a third lepton for which ptLepton > 10 GeV
  - min(DeltaR(l,l)) > 0.3

related_to_hepdata_records:
  - 72886
  - 12882

---
# Start a new YAML document to indicate a new data table.
# This is Table 1.
name: "Table 1"
location: Data from Page 17 of preprint
related_to_table_dois:
  - "10.17182/hepdata.72886.v2/t5"
  - "10.17182/hepdata.12882.v1/t9"
description: The measured fiducial cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding
```

Feedback Action

Records

- Record title display instead of only ID.

<https://doi.org/10.17182/hepdata.321>

This record is related to:

- [Isoclinic \$n\$ -planes in Euclidean \$2n\$ -space, Clifford parallels in elliptic \$\(2n-1\)\$ -space, and the Hurwitz matrix equations \(322\)](#)

Tables

- Table name display instead of only DOI.
- Mouseover tooltips for related records!

 Revise Submission

 Download All ▾

 Filter 8 data tables

Table 1 >

Data from Page 17 of preprint
[10.17182/hepdata.321.v1/t1](https://doi.org/10.17182/hepdata.321.v1/t1)

The measured fiducial cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding luminosity, the second is the...

Table 1 [10.17182/hepdata.321.v1/t1](https://doi.org/10.17182/hepdata.321.v1/t1)

Data from Page 17 of preprint

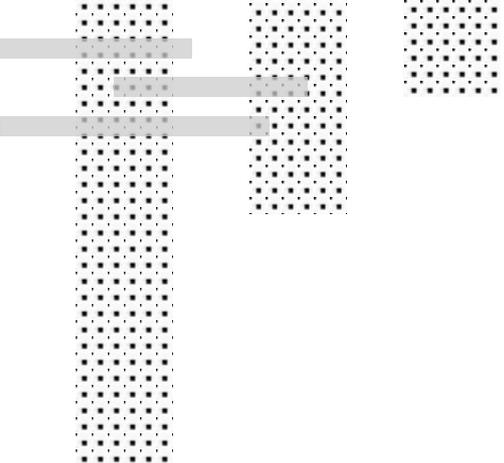
This table is related to:

- [Table 1 - \(10.17182/hepdata.322.v1/t1\)](#)

This table  The measured fiducial cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding luminosity, the second is the luminosity

The measured fiducial cross sections. The first systematic uncertainty is the combined systematic uncertainty excluding luminosity, the second is the luminosity

[Resources](#)



End Notes

Thanks for your time.

Feedback & Further Work

Contact - info@hepdata.net

- Mouseover preview
- Replace DOI/Records with names
- ++?

Submission Assistance
(HEPData Submission)

<https://hepdata-submission.readthedocs.io/en/latest/bidirectional.html>

