

The TLS214_NPL_PUBLN Table

This notebook explores the `TLS214_NPL_PUBLN` table, which contains crucial information on **non-patent literature (NPL)** citations associated with patents. Non-patent literature includes references to scientific articles, technical standards, and online documents that are not classified as patents but significantly contribute to the background knowledge of an invention. `TLS214_NPL_PUBLN` provides unstructured bibliographic information about these citations, categorizing and, where possible, structuring details like authors, titles, publishers, dates, and identifiers such as DOIs, ISBNs, and ISSNs.

The `NPL_PUBLN_ID` is the primary identifier for each NPL citation. Additional fields, including `NPL_TYPE`, `NPL_AUTHOR`, `NPL_TITLE1`, and `NPL_PUBLN_DATE`, help capture detailed bibliographic data depending on the NPL type. Types are assigned according to citation categories such as book citations, journal citations, and web-based citations, which dictate which fields are likely to be populated.

Each type of NPL citation (e.g., journal articles, online sources, and technical reports) comes with a varying degree of structured metadata. For example, journal citations often include detailed fields like `NPL_AUTHOR`, `NPL_VOLUME`, `NPL_ISSUE`, and `NPL_PAGE_FIRST`, which provide a rich basis for analysis. Online citations may contain attributes specific to web sources, such as `ONLINE_AVAILABILITY` and `ONLINE_SEARCH_DATE`, reflecting the rise in digital and database citations in recent years.

Analysing the `TLS214_NPL_PUBLN` table allows for a deeper understanding of the scientific and technical background influencing patent documents. Non-patent literature often indicates the foundation of emerging technologies, and cross-referencing these citations with patent publications can reveal interdisciplinary trends and areas where patented inventions are built upon or diverge from existing research.

```
In [2]: from epo.tipdata.patstat import PatstatClient
        from epo.tipdata.patstat.database.models import (
            TLS201_APPLN,
            TLS212_CITATION,
            TLS211_PAT_PUBLN,
            TLS214_NPL_PUBLN
        )
        from sqlalchemy import and_, case, func, select

        # Initialise the PATSTAT client
        patstat = PatstatClient(env="TEST")

        # Access ORM
        db = patstat.orm()
```

Key Fields in the TLS214_NPL_PUBLN Table

NPL_PUBLN_ID

The attribute `NPL_PUBLN_ID` is the primary key to uniquely identify non-patent literature (NPL) citations.

XP_NR

The `XP_NR` attribute, also known as the XP number, uniquely identifies non-patent literature (NPL) items that have been used by EPO examiners. These items—like research articles, books, or webpages—are given a specific accession number by the EPO for internal tracking. This number is recorded in the `XP_NR` field in DOCDB and PATSTAT databases and is used to distinguish NPL citations that have played a role in prior art searches within patent examination procedures.

The `XP_NR` helps track NPLs cited by EPO examiners, giving each a unique identifier unless they have only been used by other offices. If an NPL has not been referenced by the EPO, it is assigned the default value of 0.

This number is also valuable in cases where an NPL refers to a patent document, such as when an NPL citation includes a reference to a specific patent publication, which can be cross-referenced with the `CITED_PAT_PUBLN_ID` in `TLS212_CITATION`.

NPL_TYPE

The `NPL_TYPE` attribute in the PATSTAT database categorizes types of non-patent literature (NPL) citations. It distinguishes between various formats and sources of NPL data based on its nature and structure:

1. General Abstracts:

- **a (Abstract citation of no specific kind):** This type indicates NPL entries with minimal information, often lacking a structured or "rich" format. These citations may refer to broad or generalized abstracts without specifying the exact source type.

2. Printed Literature:

- **b (Book citation):** Used for references to books.
- **c (Chemical abstracts citation):** Refers specifically to abstracts from chemical literature.
- **i (Biological abstracts citation):** Denotes citations from biological abstracts.
- **j (Patent Abstracts of Japan citation):** Indicates that the citation comes from the "Patent Abstracts of Japan" database.
- **s (Serial / Journal / Periodical citation):** Used for citations from academic or professional journals, serials, or periodicals.

3. Online and Database Sources:

- **d (Derwent citation):** Citations sourced from the Derwent database.
- **e (Database citation):** Used for citations from various databases, distinguishing them from web-based sources.
- **w (World Wide Web / Internet search citation):** Refers to NPL entries sourced from internet searches or online publications.

4. Dummy Entry:

- **space:** This empty designation is used as a dummy placeholder, typically where a citation lacks a specific type.

The default value for `NPL_TYPE` is "a", assigned to general abstracts with limited structural data. This attribute helps classify NPL citations by source type, which supports more granular analysis of cited literature across patents.

NPL_BIBLIO

This attribute contains bibliographic data related to Non-Patent Literature (NPL). It serves as a record of citations that reference NPL materials, which may include books, articles, reports, and other scholarly works not covered by patents.

```
In [2]: sample_npl_records = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

sample_npl_res = patstat.df(sample_npl_records)
sample_npl_res
```

Out [2]:

		npl_publn_id	xp_nr	npl_type	npl_biblio
0	0000269DA4B7AFB6D0716DDAF91F973D	None		a	Kang, Tao et al., 'Determining Natural Arm Con...
1	00004E194997474EA454E861B2734E01	None		a	Huffman, John Pearley, 'GEM E825', Aug. 2002, ...
2	0000D32AE73D53FA12E9D8A639D6F090	None		a	"Injecting Trust to Protect Revenue and Reputa...
3	0000F34A4E9A83AD5FE491609D1FE546	None		a	PSI Sinewave Interactive Inverter Charger Tech...
4	0000F465A69E7B343B5B32C5B688E334	None		s	徐洪涛等: '利用尖劈和粗糙元技术模拟大气边界层的研究', 《公路交通科技》, vol. 2...
...
291040	FFFEA59B2225461BB0101D6A7F5D7807	None		a	Chinese Office Action for Application No. 2009...
291041	FFFEFDFF2E80CE58EE8DA22093DCBBD1	None		a	International Search Report of PCT/JP2021/0385...
291042	FFFF1FE7D846113F48669D4E18995558	None		a	European Search Reports dated Jan. 5, 2017 cor...
291043	FFFF64649588E1947EB8585409D122E0	None		a	Froehlich, Jon , et al. , "Disaggregated End-U...
291044	FFFF98CFFFC1F2156FBD5022BC073C27	None		b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo...

291045 rows × 4 columns

There is no xp_nr they are all NONE

```
In [3]: query_npl_with_xp_nr = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio
    )
    .filter(TLS214_NPL_PUBLN.xp_nr != None) # Filter for entries
    where XP_NR is not zero
)

# Convert the result to a DataFrame
npl_with_xp_nr_res = patstat.df(query_npl_with_xp_nr)

# Display the resulting DataFrame
npl_with_xp_nr_res
```

Out[3]:

```
Out[3]: 
--snip--

In [4]: npl_citation_count = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        func.count(TLS212_CITATION.cited_npl_publn_id).label('citation_count') # Count citations
    )
    .join(TLS212_CITATION, TLS214_NPL_PUBLN.npl_publn_id == TLS212_CITATION.cited_npl_publn_id) # Join condition
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0') # Exclude NPL
    publn_id equal to 0
    .group_by(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio
    )
    .order_by(func.count(TLS212_CITATION.cited_npl_publn_id).label('citation_count').desc()) # Order by NPL publn_id
)

# Convert the result to a DataFrame
npl_citation_count_res = patstat.df(npl_citation_count)

# Display the resulting DataFrame
npl_citation_count_res
```

Out[4] :

			npl_publn_id	xp_nr	npl_type	npl_biblio	citation
0	AC20122300125A92827A632E26F55A2F			None	a	Sommerfeld, A. , "On the propagation of electr...	
1	1D54EED20D327BDB9E8AD38FB1A3DA83			None	a	Elmore, Glenn , "Introduction to the Propagati...	
2	99BE5D6450F208B4D64B9DA0EA63AB50			None	a	Ren-Bin, Zhong et al., "Surface plasmon wave p...	
3	BDE01A9CB0674AE9E2C6DA37E5002EF1			None	a	Barlow, H. M. et al., "Surface Waves", 621.396...	
4	B0E309B6129FD644E5F67B8B4D305ECC			None	a	Friedman, M. et al., "Low-Loss RF Transport Ov...	
...
291040	A69CC8F2281BED068171299C488E568B			None	w	BASU B J ET AL: 'A novel pyrene-based binary p...	
291041	D0A1143EBB7DE62128CB6726C52BD1DD			None	w	FORSELL U.: 'Closed-loop Identification Metho...	
291042	27811AFB287B02BB9AFF33C6873A605E			None	w	STACK ET AL., CONCEPTUAL DESIGN AND PERFORMANC...	
291043	A33FA71CED86CF302A123561A9839963			None	w	GRAVES ALEX ET AL: 'Speech recognition with de...	
291044	1E8A8A9DE213B2D43F9381E67E4C967E			None	w	GREENLEE ET AL: 'Design of subsea energy stora...	

291045 rows × 5 columns

```
In [5]: # Specify the NPL publication ID you want to check
specific_npl_publn_id = 'AC20122300125A92827A632E26F55A2F'

# Query to join NPL and Citation tables for the specific NPL
detailed_npl_citations = (
    db.query(
        TLS212_CITATION.pat_publn_id, # Patent publication ID citing the NPL
        TLS212_CITATION.cited_npl_publn_id, # The cited NPL publication ID
        TLS212_CITATION.citn_id, # Citation ID
        TLS212_CITATION.citn_origin, # Citation sequence number
        TLS212_CITATION.npl_citn_seq_nr,
        TLS214_NPL_PUBLN.xp_nr, # Unique identifier for the NPL
        TLS214_NPL_PUBLN.npl_type, # Type of the NPL
        TLS214_NPL_PUBLN.npl_biblio # Bibliographic data of the NPL
    )
    .join(TLS214_NPL_PUBLN, TLS212_CITATION.cited_npl_publn_id == TLS214_NPL_PUBLN.npl_publn_id) # Join condition
    .filter(TLS214_NPL_PUBLN.npl_publn_id == specific_npl_publn_id) # Filter for the specific NPL publn_id
    .order_by(TLS212_CITATION.pat_publn_id) # Order by patent publication ID
)

# Convert the result to a DataFrame
detailed_npl_citations_res = patstat.df(detailed_npl_citations)

# Display the resulting DataFrame
detailed_npl_citations_res
```

Out[5]:

	pat_publn_id	cited_npl_publn_id	citn_id	citn_origin	npl_citn_seq_i
0	423904579	AC20122300125A92827A632E26F55A2F	101	APP	1
1	440586846	AC20122300125A92827A632E26F55A2F	131	APP	2
2	445086230	AC20122300125A92827A632E26F55A2F	141	APP	3
3	451158451	AC20122300125A92827A632E26F55A2F	124	APP	2
4	471650228	AC20122300125A92827A632E26F55A2F	132	APP	3
...
270	562508515	AC20122300125A92827A632E26F55A2F	410	APP	1
271	568969669	AC20122300125A92827A632E26F55A2F	405	APP	1
272	574165585	AC20122300125A92827A632E26F55A2F	412	APP	1
273	576172092	AC20122300125A92827A632E26F55A2F	187	APP	1
274	580242040	AC20122300125A92827A632E26F55A2F	375	APP	1

275 rows × 8 columns

```
In [6]: # Check for duplicates in 'pat_publn_id'  
duplicate_pat_publn_ids = detailed_npl_citations_res[detailed_npl  
_citations_res.duplicated(['pat_publn_id'], keep=False)]  
  
# Display the duplicates  
duplicate_pat_publn_ids
```

Out[6]:

pat_publn_id	cited_npl_publn_id	citn_id	citn_origin	npl_citn_seq_nr	xp_nr	npl_type	ni
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```
In [7]: query_npl_citations = (  
    db.query(  
        TLS214_NPL_PUBLN.npl_publn_id,  
        TLS214_NPL_PUBLN.xp_nr,  
        TLS214_NPL_PUBLN.npl_type,  
        TLS214_NPL_PUBLN.npl_biblio,  
        TLS212_CITATION.pat_publn_id,  
        TLS212_CITATION.cited_npl_publn_id  
    )  
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')  
    .join(TLS212_CITATION, TLS214_NPL_PUBLN.npl_publn_id == TLS21  
2_CITATION.cited_npl_publn_id)  
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)  
)  
  
# Convert the result to a DataFrame  
npl_citations_res = patstat.df(query_npl_citations)  
  
# Display the resulting DataFrame  
npl_citations_res
```

Out[7] :

		npl_publn_id	xp_nr	npl_type	npl_biblio	pat_publn_
0	0000269DA4B7AFB6D0716DDAF91F973D	None	a	Kang, Tao et al., 'Determining Natural Arm Con...		4211542
1	00004E194997474EA454E861B2734E01	None	a	Huffman, John Pearley, 'GEM E825', Aug. 2002, ...		4504691
2	0000D32AE73D53FA12E9D8A639D6F090	None	a	"Injecting Trust to Protect Revenue and Reputa...		4470575
3	0000D32AE73D53FA12E9D8A639D6F090	None	a	"Injecting Trust to Protect Revenue and Reputa...		4139783
4	0000D32AE73D53FA12E9D8A639D6F090	None	a	"Injecting Trust to Protect Revenue and Reputa...		4434747
...
733798	FFFF64649588E1947EB8585409D122E0	None	a	Froehlich, Jon , et al. , "Disaggregated End-U...		6020851
733799	FFFF64649588E1947EB8585409D122E0	None	a	Froehlich, Jon , et al. , "Disaggregated End-U...		6020850
733800	FFFF98CFFFC1F2156FBD5022BC073C27	None	b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo...		4132202
733801	FFFF98CFFFC1F2156FBD5022BC073C27	None	b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo...		4132202
733802	FFFF98CFFFC1F2156FBD5022BC073C27	None	b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo...		4132202

733803 rows × 6 columns

```
In [8]: # Check for duplicates in 'pat_publn_id'  
duplicate= npl_citations_res[npl_citations_res.duplicated(['pat_p  
ubln_id'], keep=False)]  
  
# Display the duplicates  
duplicate
```

Out[8]:

		npl_publn_id	xp_nr	npl_type	npl_biblio	pat_publn_
0	0000269DA4B7AFB6D0716DDAF91F973D	None	a	Kang, Tao et al., 'Determining Natural Arm Con...		4211542
1	00004E194997474EA454E861B2734E01	None	a	Huffman, John Pearley, 'GEM E825', Aug. 2002, ...		4504691
2	0000D32AE73D53FA12E9D8A639D6F090	None	a	"Injecting Trust to Protect Revenue and Reputa...		4470575
3	0000D32AE73D53FA12E9D8A639D6F090	None	a	"Injecting Trust to Protect Revenue and Reputa...		4139783
4	0000D32AE73D53FA12E9D8A639D6F090	None	a	"Injecting Trust to Protect Revenue and Reputa...		4434747
...
733798	FFFF64649588E1947EB8585409D122E0	None	a	Froehlich, Jon , et al. , "Disaggregated End-U...		6020851
733799	FFFF64649588E1947EB8585409D122E0	None	a	Froehlich, Jon , et al. , "Disaggregated End-U...		6020850
733800	FFFF98CFFFC1F2156FBD5022BC073C27	None	b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo...		4132202
733801	FFFF98CFFFC1F2156FBD5022BC073C27	None	b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo...		4132202
733802	FFFF98CFFFC1F2156FBD5022BC073C27	None	b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo...		4132202

706264 rows × 6 columns

```
In [9]: query_book_citations = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        func.count(TLS212_CITATION.cited_npl_publn_id).label('citation_count')
    )
    .join(TLS212_CITATION, TLS214_NPL_PUBLN.npl_publn_id == TLS212_CITATION.cited_npl_publn_id, isouter=True)
    .filter(TLS214_NPL_PUBLN.npl_type == 'b')
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .group_by(TLS214_NPL_PUBLN.npl_publn_id, TLS214_NPL_PUBLN.xp_nr, TLS214_NPL_PUBLN.npl_type, TLS214_NPL_PUBLN.npl_biblio)
    .order_by(func.count(TLS212_CITATION.cited_npl_publn_id).label('citation_count')).desc()).limit(10)
)

# Convert the result to a DataFrame
book_citations_res = patstat.df(query_book_citations)

# Display the resulting DataFrame
book_citations_res
```

Out[9]:

		npl_publn_id	xp_nr	npl_type	npl_biblio	citation_cou...
0	82AC61410D0374C35AB4CE739C3563C7	None	b	17 March 2017, PACKT PUBLISHING , ISBN: 978-1...		4
1	6628C2C74B9B5E60AC56834306A7A478	None	b	YIJUN LIU: 'Handbook of Polyurethane Raw Mater...		
2	A17A81CF38BE458B60EB3D35FF5A0A6A	None	b	'CIRP Annals - Manufacturing Technology', vol....		
3	7424DD441B42D40EE7F090AFACF15FFE	None	b	李春: '《现代大型 风力机设计原 理》 ', 31 January 2013, 上海科学技 术出版社		
4	676E92C1D0289370683DEC84642B6B2B	None	b	Houben Weyl: 'Makromolekulare Stoffe', vol. XI...		
5	F4BC4BA3F20FC6F52C130AF830ADA6B0	None	b	HAU ERICH ED - HAU E: 'Windkraftanlagen, Ausge...		
6	4BEF4FB94DFF7BC5EED89B0D082C53	None	b	PARNAS ET AL.: 'Liquid Composite Moulding', 20...		
7	CEE9ECE3E0C59A25986DB65FED8D5676	None	b	'Reliability Theory and Practice', 31 December...		
8	A3C767F3A83B4D663B9C9BA7058E6EB3	None	b	'Agnew, Chem. Intl. Ed. Engl.', vol. 33, 1994,...		
9	25C7CA921A732BA400AA8A7D077CF6F7	None	b	'Wind Energy Handbook', JOHN WILEY & SONS, pag...		

```
In [10]: query_web_citations = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        func.count(TLS212_CITATION.cited_npl_publn_id).label('citation_count')
    )
    .join(TLS212_CITATION, TLS214_NPL_PUBLN.npl_publn_id == TLS212_CITATION.cited_npl_publn_id, isouter=True)
    .filter(TLS214_NPL_PUBLN.npl_type == 'w')
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .group_by(TLS214_NPL_PUBLN.npl_publn_id, TLS214_NPL_PUBLN.xp_nr, TLS214_NPL_PUBLN.npl_type, TLS214_NPL_PUBLN.npl_biblio)
    .order_by(func.count(TLS212_CITATION.cited_npl_publn_id).label('citation_count')).desc()).limit(10)
)

# Convert the result to a DataFrame
web_citations_res = patstat.df(query_web_citations)

# Display the resulting DataFrame
web_citations_res
```

Out[10]:

		npl_publn_id	xp_nr	npl_type		npl_biblio	citation_co...
0	13BC922E726BC8D08D7CE25D71A55AA4	None		w	YUQING TANG: 'High Power Inverter EMI characte...		
1	B17BD4D26471A633C674534CD23BBF6D	None		w	BACCINO FRANCESCO ET AL: 'An Optimal Model-Bas...		
2	22A0620BB047CDEC36781DA100ED7712	None		w	MANFRED BEYER ET AL: 'New BAUER Flydrill syste...		
3	575268A42E7AFA839B8FC7573F190158	None		w	BOSSANYI E A: 'The Design of Closed Loop Contr...		
4	D12FA067EBD80F3BC02AADB0A18FFED0	None		w	PRILLWITZ F ET AL: 'Primärregelung mit Windkra...		
5	A18BE4607DE089C6D036425350BA7134	None		w	LI WEN ET AL: 'Automatic Bird Species Detectio...		
6	B2D297847DDCDAAD1E18B64561B19816	None		w	BERT DEN OUDEN: 'Electrification in the Dutch ...		
7	B804F4EF30D63DC6954D1BFFBAAA1C63	None		w	GINGER GARDINER: 'Sensors for monitoring resin...		
8	E87BD20B35F7CD8DF2156F4A17F93603	None		w	PRILLWITZ F ET AL: 'Primärregelung mit Windkra...		
9	EE244465F686D96199D48F2547C93E24	None		w	SIEMENSGAMESA: 'How a small robot innovates ro...		

NPL_AUTHOR:

The author of the online article or document. This attribute may only be populated for these NPL types:

- Book citation (b)
- Chemical Abstract citation (c)
- Biological abstract citation (i)
- Serial / Journal / Periodical citation (s)
- Derwent citation (d)
- Database citation (e)
- World Wide Web / Internet search citation (w)

```
In [4]: npl_author = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_author != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

author_res = patstat.df(npl_author)
author_res
```

Out [4]:

		npl_publn_id	xp_nr	npl_type	npl_biblio	npl_autho...
0	0000F465A69E7B343B5B32C5B688E334	None	s	徐洪涛等: '利 用尖劈和粗糙 元技术模拟大 气边界层的研 究', 《公路交 通科技》, vol. 2...		徐洪涛...
1	0003477C90FCF66328A5D6030EA1F6AF	None	s	支欣 等: "综合 能源系统的运 行优化配置分 析", 《自动化的 与仪器仪表》, no. 08,...		支欣...
2	0003BCB82D667DABC8B4C0C7CE188095	None	w	BORUP M ; ET AL: 'General rights Copyright and...		Borup M ;

3	000412DBB9ABCB3BCABD76B5433C6A21	None	s	鲁朝静: '齿轮箱复合故障诊断方法的研究',《中国优秀硕士学位论文全文数据库工程科技II辑...	鲁朝		
4	0005A8D2B2F68948B0296E7999FAC02C	None	s	李卫东: '大功率缺失下主动频率响应控制初探',《电力系统自动化》	李卫		
...
59645	FFFFB9C35DEE47FB3DC7AAB8086799731	None	s	张光亚等: '考虑供需互动和分布式电源运行特性的主动配电网网架规划',《电网规划》	张光亚		
59646	FFFBD1B477D2918F38526390F9C108B1	None	w	ANONYMOUS: 'Standard insulated heating tape', ...	ANONYMOUS		
59647	FFFCB44347687FA2DADBF5BB375B563C	None	s	徐迅等: '考虑环境成本和时序特性的微网多类型分布式电源选址定容规划', 电网技术, vol...	徐迅		
59648	FFFE2919480E05F7D3E0F62CBEB9243A	None	s	HIEU T. NGUYEN等: 'Occlusion robust adaptive te...	Hieu Nguyen		
59649	FFFE72A0319D989E157DCE3E284C2F9A	None	s	原亚宁: '基于改进帝国竞争算法的交直流混合微网经济调度',《技术交流》	原亚宁		

59650 rows × 5 columns

NPL_TITLE1 and NPL_TITLE2:

Primary and secondary titles of the online article. This attribute may only be populated for these NPL types:

- Book citation (b)
- Chemical Abstract citation (c)
- Biological abstract citation (i)
- Patent Abstracts of Japan (j) (if TITLE2)
- Serial / Journal / Periodical citation (s)
- Derwent citation (d)
- Database citation (e) (if TITLE1)
- World Wide Web / Internet search citation (w)

```
In [7]: npl_title = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_title1 != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_title)
npl_res
```

Out [7]:

		npl_publn_id	xp_nr	npl_type	npl_biblio	npl_aut
0	0000F465A69E7B343B5B32C5B688E334	None	s	徐洪涛等: '利用尖劈和粗糙元技术模拟大	气边界层的研究', 《公路交通科技》, vol. 2...	徐洪涛
1	0003477C90FCF66328A5D6030EA1F6AF	None	s	支欣 等: "综合能源系统的运行优化配置分析", 《自动化与仪器仪表》, no. 08,...	支欣	

					BORUP M ; ET AL: 'General rights Copyright and...'	
2	0003BCB82D667DABC8B4C0C7CE188095	None	w		Borup M ;	
3	000412DBB9ABCB3BCABD76B5433C6A21	None	s	魯朝靜: '齒輪 箱複合故障診 斷方法的研究', 《中國優秀碩 士學位論文全 文數據庫 工程 科技II輯...'	魯朝	
4	0005A8D2B2F68948B0296E7999FAC02C	None	s	李衛東: '大功 率缺失下主動 頻率響應控制 初探', 《電力 系統自動化》	李衛	
...
59912	FFFB9C35DEE47FB3DC7AAB8086799731	None	s	張光亞等: '考 慮供需互動和 分布式電源運 行特性的主動 配电网架規 劃', 《電網規 劃》	張光亞	
59913	FFFBD1B477D2918F38526390F9C108B1	None	w	ANONYMOUS: 'Standard insulated heating tape', ...	ANONYMOUS	
59914	FFFCB44347687FA2DADBF5BB375B563C	None	s	徐迅等: '考慮 環境成本和時 序特性的微網 多類型分布式 電源選址定容 規劃', 《電網技 術, vol...}	徐迅	
59915	FFFE2919480E05F7D3E0F62CBEB9243A	None	s	HIEU T. NGUYEN等: 'Occlusion robust adaptive te...'	Hieu Nguye	
59916	FFFE72A0319D989E157DCE3E284C2F9A	None	s	原亞寧: '基於 改善帝國競爭 算法的交直流 混合微網經濟 調度', 《技術 交流》	原亞寧	

59917 rows × 7 columns

NPL_VOLUME:

Volume number if it is part of a journal or series. This attribute may only be populated for these NPL types:

- Book citation (b)
- Chemical Abstract citation (c)
- Biological abstract citation (i)
- Patent Abstracts of Japan (j)
- Serial / Journal / Periodical citation (s)
- Derwent citation (d)
- World Wide Web / Internet search citation (w)

```
In [8]: npl_volume = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_volume != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_volume)
npl_res
```

Out [8]:

	npl_publn_id	xp_nr	npl_type	npl_biblio	npl_author
0	0000F465A69E7B343B5B32C5B688E334	None	s	徐洪涛等: '利 用尖劈和粗糙 元技术模拟大 气边界层的研 究', 《公路交 通科技》, vol. 2...	徐洪涛等
1	00089E39915F8E31FC16F7556310C299	None	s	金爱娟等: '并 联Buck 变换 器的均流控制 技术', 《电子 科技》, vol.	金爱娟等

							29, no...
2	000AB94DFBAB5CA3AF12E72D75991338	None	s	PORTER, R. R., BIOCHEM. J., vol. 73, pages 9 - 26		PORTER, R. R.	
3	001EB87E00AEB933E632A174655B256D	None	s	K. J. STANDISH ET AL.: 'Aerodynamic Analysis o...'		K. J. STANDISH et al.	
4	0020E1F28668A5DBD05ADF4CDDC290C1	None	s	雷歌, 邓飞, 刘 权等: '水下航 行器折叠翼展 开机构设计与 动力学仿真', 《鱼雷技 术》, v...		雷歌, 邓飞, 刘权等	
...
12576	FFF43E8DD93999E07AE9BE83C4C390CF	None	s	屈子森等: '基 于自适应虚拟 阻抗的虚拟同 步机功率解耦 控制策略', 《电力系统自 动化》, vo...		屈子森等	
12577	FFF4BDC2D985997443FC8604DC401B08	None	s	赵泰峰等: '调 度主站AGC软 件负荷分配的 研究', 《电网 技术》, vol. 29, no....		赵泰峰等	
12578	FFF8719579CEE6643E47DE7D0A80D46E	None	s	Y. SUK. ZHANGQ. GONG: 'Theoretical and experim...		Y. SUK. ZHANGQ. GONG	
12579	FFFCB44347687FA2DADBF5BB375B563C	None	s	徐迅等: '考虑 环境成本和时 序特性的微网 多类型分布式 电源选址定容 规划', 电网技 术, vol...		徐迅等	
12580	FFFE2919480E05F7D3E0F62CBEB9243A	None	s	HIEU T. NGUYEN等: 'Occlusion robust adaptive te...		Hieu T. Nguyen等	

12581 rows × 8 columns

NPL_EDITOR:

Name of the editor or the author of a book. This attribute may only be populated for these NPL types:

- Book citation (b)

```
In [12]: npl_editor = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_editor != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_editor)
npl_res
```

Out [12]:

		npl_publn_id	xp_nr	npl_type		npl_biblio	npl_e
0	00012979D6CC8C5A74CC57837FB54618			None	b	中华人民共和国工业和 信息化部: '《QC/T 568.1-2011 汽车机械 式变速器总成 台...	
1	000333B6997E19B8C1EECC283F403B7F			None	b	李博洋, 闫芳, 单士 俊, 周克斌: '《机械原 理简明教程》', 31 March 2014, 西...	
2	0005DBD2D037C3C8856AE29D1F6CE79D			None	b	(美) 朱拉金斯基 (G.SZULADZINSKI) 著: '《机器与结结构动 力学 例题与习题》'...	
3	0005F85323D4F670F3FC3DD02A526321			None	b	李鉴增, 金立标, 苗 方: '《宽带网络技 术》', 30 September	

							2015
4	001643D74678D1AC9A5A4AAA0313AABF	None	b	李念奎, 凌果等编著: '《铝合金材料及其热 处理技术》', 30 April 2012
5200	FFE7BFDF5236338D28F6F0F454A34119	None	b	PAUL SCHERZ: 'Practical Electronics for Invent...
5201	FFF1E2E41760E61B92111D6A0FEF4F33	None	b	蔡伟维: '《赛欧轿车故 障检修图解》', 31 May 2004, 四川科学技 术出版社
5202	FFFBA06F8F0DFE9487CEE6006BC9B228	None	b	黄连忠: '《辽宁省首批 “十二五”普通高等教育 本科省级规划教材 船 舶动力装置技术管 理》',
5203	FFFBCDC5ABC4428286BCBFF969766D7B	None	b	中国机械工程学会焊接 学会: '《焊接手册（第 三版）第三卷 焊接结 构》', 31 Octobe...
5204	FFFF98CFFFC1F2156FBD5022BC073C27	None	b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo...

5205 rows × 9 columns

NPL_ISSUE:

Specifies the issue of a Non-Patent Literature. This attribute may only be populated for these NPL types:

- Chemical Abstract citation (c)
- Biological abstract citation (i)
- Patent Abstracts of Japan (j)
- Serial / Journal / Periodical citation (s)
- Derwent citation (d)
- World Wide Web / Internet search citation (w)

```
In [13]: npl_issue = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_issue != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_issue)
npl_res
```

Out [13]:

		npl_publn_id	xp_nr	npl_type	npl_biblio	npl_author
0	0000F465A69E7B343B5B32C5B688E334	None	s	徐洪涛等: '利用尖劈和粗糙元技术模拟大气边界层的研究', 《公路交通科技》, vol. 2...		徐洪涛等
1	0003477C90FCF66328A5D6030EA1F6AF	None	s	支欣 等: '综合能源系统的运行优化配置分析', 《自动化与仪器仪表》, no. 08,...		支欣 等
2	000412DBB9ABCB3BCABD76B5433C6A21	None	s	鲁朝静: '齿 轮箱复合故障诊断方法 的研究', 《中国优秀硕士学位论文全文数据库 工程科 技II辑...》		鲁朝静

金爱娟等: '并联Buck

3	00089E39915F8E31FC16F7556310C299	None	s	变换器的均流控制技术', 《电子科技》, vol. 29, no...	金爱娟等			
4	0020E1F28668A5DBD05ADF4CDDC290C1	None	s	雷歌, 邓飞, 刘权等: '水下航行器折叠翼展开机构设计与动力学仿真', 《鱼雷技术》, v...	雷歌, 邓飞, 刘权等			
...
15819	FFE9C5C5907793A8ADB169B5FB4EB0E6	None	s	陈中等: '基于“区域阻尼”的互联电网阻尼分析与控制的研究', 《电力系统保护与控制》	陈中等			
15820	FFF43E8DD93999E07AE9BE83C4C390CF	None	s	屈子森等: '基于自适应虚拟阻抗的虚拟同步机功率解耦控制策略', 《电力系统自动化》, v0...	屈子森等			
15821	FFF4BDC2D985997443FC8604DC401B08	None	s	赵泰峰等: '调度主站AGC软件负荷分配的研究', 《电网技术》, vol. 29, no....	赵泰峰等			
15822	FFF8719579CEE6643E47DE7D0A80D46E	None	s	Y. SUK. ZHANGQ. GONG: 'Theoretical and experim...	Y. SUK. ZHANGQ. GONG	e		
15823	FFFCB44347687FA2DADBF5BB375B563C	None	s	徐迅等: '考虑环境成本和时序特性的微网多类型分布式电源选址定容	徐迅等			

规划', 电网
技术, vol...

15824 rows × 10 columns

NPL_PUBLN_DATE:

Publication date of the cited material. This attribute may only be populated for these NPL types:

- Book citation (b)
- Chemical Abstract citation (c)
- Biological abstract citation (i)
- Patent Abstracts of Japan (j)
- Serial / Journal / Periodical citation (s)
- Derwent citation (d)
- Database citation (e)
- World Wide Web / Internet search citation (w)

```
In [14]: npl_date = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_publn_date != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_date)
npl_res
```

Out [14]:

	npl_publn_id	xp_nr	npl_type	npl_biblio	npl_auth
0	0000F465A69E7B343B5B32C5B688E334	None	s	徐洪涛等: '利 用尖劈和粗糙 元技术模拟大 气边界层的研 究', 《公路交 通科技》, vol. 2...	徐洪涛

1	00012979D6CC8C5A74CC57837FB54618	None	b	中华人民共和国工业和信息化部: '《QC/T 568.1-2011 汽车机械式变速器总成 台...		Nc	
2	00032A0C40A369642B3C6DA6663D472F	None	b	'ASTM C172 / C172M-14a, Standard Practice for ...		Nc	
3	000333B6997E19B8C1EECC283F403B7F	None	b	李博洋, 闫芳, 单士俊, 周克斌: '《机械原理简明教程》', 31 March 2014, 西...		Nc	
4	0003BCB82D667DABC8B4C0C7CE188095	None	w	BORUP M ; ET AL: 'General rights Copyright and...	Borup M ;		
...	
22583	FFFBA06F8F0DFE9487CEE6006BC9B228	None	b	黃连忠: '《辽宁省首批“十二五”普通高等教育本科省级规划教材 船舶动力装置技术管理》', ...		Nc	
22584	FFFBCDC5ABCA428286BCBFF969766D7B	None	b	中国机械工程学会焊接学会: '《焊接手册(第三版) 第三卷 焊接结构》', 31 October...		Nc	
22585	FFFBD1B477D2918F38526390F9C108B1	None	w	ANONYMOUS: 'Standard insulated heating tape', ...	ANONYMO		
22586	FFFFE2919480E05F7D3E0F62CBEB9243A	None	s	HIEU T. NGUYEN等: 'Occlusion robust adaptive te...	Hie Nguye		

22587	FFFF98CFFFC1F2156FBD5022BC073C27	None	b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo... No
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22588 rows × 11 columns

NPL_PUBLN_END_DATE:

This field captures the end date of publication for the Non-Patent Literature. This attribute may only be populated for these NPL types:

- Serial / Journal / Periodical citation (s)
- World Wide Web / Internet search citation (w)

```
In [15]: npl_enddate = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date,
        TLS214_NPL_PUBLN.npl_publn_end_date
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_publn_end_date != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_enddate)
npl_res
```

Out [15]:

	npl_publn_id	xp_nr	npl_type	npl_biblio	npl_author
0	01BDD7CAE56DDFCE28981E81EC693427	None	s	PETOSA A., THIRAKOUNC S., ZULIANI M., ITTIPIBO...	Petosa A., Thirakoun S., Zuliani M., Ittipibo...
1	01CE70F9EF603E6822AB0DE0957964F4	None	s	BECHERT ET AL.: 'Drag reduction of airfoils wi...	BECHERT et al.

2	024F6648436FB726E1D2CB8FC48AEBF7	None	w	EROMON ET AL: 'Distributed Energy Resource (DE...)						EROMON ET AL	
3	03A5FB962676A674B6BFB6625393B88D	None	s	HAN JU CHA ET AL.: 'A New Soft Switching Direc...						HAN JU CHA ET AL.	
4	046C4BE4ABDD0F69BFB583C3F0016284	None	s	M. LACKNER ET AL.: 'A Comparison of Smart Roto...						M. LACKNER et al.	
...	
204	F7D70882A7A0E2845084FA3D4C677DD4	None	s	MARTINEZ ET AL: 'Design and coordination of a ...						MARTINEZ ET AL	
205	F828E982664B5304C3470C1BA08AA12A	None	s	COLQUHOUN ET AL: 'MMICs for Automotive and Tra...						COLQUHOUN ET AL	
206	F82E5035CD11E0CFEF3366DCB7B7089D	None	s	CAIRNS DOUGLAS S, BUNDY BRYAN C: 'The Applicat...						CAIRNS DOUGLAS S, BUNDY BRYAN C	
207	FB00C0DFE65CC26EAD796FA5E2CDCA08	None	s	I. WEISS ET AL.: 'A new PV system technology-t...						I. WEISS ET AL.	
208	FE55D77FD215EAA5CBCABE5B89496138	None	s	GEYER, T.; PAPAFOTIOU, G.;: 'Model Predictive ...						GEYER, T.; PAPAFOTIOU, G.;	

209 rows × 12 columns

NPL_PUBLISHER:

Publisher of the document. This attribute may only be populated for these NPL types:

- Book citation (b)
- Derwent citation (d)
- Database citation (e)
- World Wide Web / Internet search citation (w)

```
In [16]: npl_publisher = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date,
        TLS214_NPL_PUBLN.npl_publn_end_date,
        TLS214_NPL_PUBLN.npl_publisher
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_publisher != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_publisher)
npl_res
```

Out[16]:

		npl_publn_id	xp_nr	npl_type		npl_biblio	npl_e
0	00032A0C40A369642B3C6DA6663D472F	None		b	'ASTM C172 / C172M-14a, Standard Practice for ...		
1	000333B6997E19B8C1EECC283F403B7F	None		b	李博洋, 闫芳, 单士俊, 周克斌: '《机械原理简明教程》', 31 March 2014, 西...		
2	0005DBD2D037C3C8856AE29D1F6CE79D	None		b	(美) 朱拉金斯基 (G.SZULADZINSKI) 著: '《机器与结结构动力学 例题与习题》'...		
3	00268C6B6D77846FC9996B9CAF51924E	None		b	顾煜炯编著: '《发电设备状态维修理论与技术》', 31 October 2009, 中国电...		
4	0086839FC2EC27E9854EC1D4047C01E6	None		b	ERICH HAU: 'Grundlagen, Technik, Einsatz von W...		
...
4342	FFE2B6BD03CFA050EC567D604D401D78	None		b	凌云星 等: '《实用油墨技术指南》', 30 November 2007, 印刷工业出版社		
4343	FFE7BFDF5236338D28F6F0F454A34119	None		b	PAUL SCHERZ: 'Practical Electronics for Invent...		
4344	FFF1E2E41760E61B92111D6A0FEF4F33	None		b	蔡伟维: '《赛欧轿车故障检修图解》', 31 May 2004, 四川科学技术出版社		
4345	FFFBCDC5ABCA428286BCBFF969766D7B	None		b	中国机械工程学会焊接学会: '《焊接手册 (第三版) 第三卷 焊接结构》', 31 Octobe...		
4346	FFFF98CFFFC1F2156FBD5022BC073C27	None		b	J.P.HIRTH; G.M. POUND: 'Condensation and evapo...		

4347 rows × 13 columns

NPL_PAGE_FIRST and NPL_PAGE_LAST:

The starting and ending pages if applicable. This attribute may only be populated for these NPL types:

- Book citation (b)
- Chemical Abstract citation (c) (if PAGE_FIRST)
- Biological abstract citation (i) (if PAGE_FIRST)
- Serial / Journal / Periodical citation (s)
- Derwent citation (d) (if PAGE_FIRST)
- World Wide Web / Internet search citation (w)

```
In [17]: npl_pages = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date,
        TLS214_NPL_PUBLN.npl_publn_end_date,
        TLS214_NPL_PUBLN.npl_publisher,
        TLS214_NPL_PUBLN.npl_page_first,
        TLS214_NPL_PUBLN.npl_page_last
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_page_first != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_pages)
npl_res
```

Out [17]:

	npl_publn_id	xp_nr	npl_type	npl_biblio	npl_author
0	0000F465A69E7B343B5B32C5B688E334	None	s	徐洪涛等 '利用尖劈 和粗糙元技 术模拟大气 边界层的研 究',《公路 交通科 技》, vol. 2...	徐洪涛等

1	00032A0C40A369642B3C6DA6663D472F	None	b	'ASTM C172 / C172M- 14a, Standard Practice for ...		None	
2	0003477C90FCF66328A5D6030EA1F6AF	None	s	支欣 等: “综合能源 系统的运行 优化配置分 析”, 《自 动化与仪器 仪表》, no. 08,...		支欣 等	
3	0003BCB82D667DABC8B4C0C7CE188095	None	w	BORUP M ; ET AL: 'General rights Copyright and... ...		Borup M ; ET AL	
4	000412DBB9ABCB3BCABD76B5433C6A21	None	s	鲁朝静: '齿 轮箱复合故 障诊断方法 的研究', 《中国优秀 硕士学位论 文全文数据 库 工程科 技II辑... ...		鲁朝静	
18959	FFF19B4D2347260A9BE6121DCD8F1754	None	s	MAHFOUZ A A ET AL: 'Unity power factor operati... ...		MAHFOUZ A A ET AL	c
18960	FFF43E8DD93999E07AE9BE83C4C390CF	None	s	屈子森等: '基于自适 应虚拟阻抗 的虚拟同步 机功率解耦 控制策略', 《电力系统 自动化》, vo... ...		屈子森等	
18961	FFF8719579CEE6643E47DE7D0A80D46E	None	s	Y. SUK. ZHANGQ. GONG: 'Theoretical and experim... 徐迅等: '考		Y. SUK. ZHANGQ. GONG	e

18962	FFFCB44347687FA2DADBF5BB375B563C	None	s	虑环境成本 和时序特性 的微网多类 型分布式电 源选址定容 规划', 电网 技术, vol...			徐迅等
18963	FFFE2919480E05F7D3E0F62CBEB9243A	None	s	HIEU T. NGUYEN 等: 'Occlusion robust adaptive te...			Hieu T. Nguyen等

18964 rows × 15 columns

NPL_ABSTRACT_NR:

This attribute stores an abstract or summary identifier related to the Non-Patent Literature (NPL) citation.
 This attribute may only be populated for these NPL types:

- Chemical Abstract citation (c)
- Biological abstract citation (i)
- Patent Abstracts of Japan (j)
- Derwent citation (d)
- Database citation (e)
- World Wide Web / Internet search citation (w)

```
In [18]: npl_abs = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date,
        TLS214_NPL_PUBLN.npl_publn_end_date,
        TLS214_NPL_PUBLN.npl_publisher,
        TLS214_NPL_PUBLN.npl_page_first,
        TLS214_NPL_PUBLN.npl_page_last,
        TLS214_NPL_PUBLN.npl_abstract_nr
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_abstract_nr != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_abs)
npl_res
```

Out [18]:

		npl_publn_id	xp_nr	npl_type	npl_biblio	npl_author	np
0	005E87824CE6FA317940AED91BEBE317	None	j	PATENT ABSTRACTS OF JAPAN vol. 008, no. 178 (C...)			None
1	009C15C816E6700154E7B12BC8B446FD	None	d	DATABASE WPI Derwent World Patents Index; AN 9...			None
2	018F1999AFCF5126B704E8C8424E1D36	None	j	PATENT ABSTRACTS OF JAPAN vol. 009, no. 245 (M...)			None
3	0196E27569BA05D4270BB533C64FBB39	None	d	DATABASE WPI Week 201438, Derwent World Patent...			None
				DATABASE WPI Week			

4	01D8C95930399C2D84766B17D8BFF676	None	d	201115, Derwent World Patent...	None
...
735	FE9660E3A29113BD0F37B66D80FF015C	None	j	PATENT ABSTRACTS OF JAPAN vol. 013, no. 349 (P...)	None
736	FEF91DFB3DA27E922D2EE1728AC0688E	None	j	PATENT ABSTRACTS OF JAPAN vol. 9, no. 51 (M - ...)	None
737	FF206D89AE27A919B8DBCA562D51D469	None	d	DATABASE WPI Derwent World Patents Index; AN 9...	None
738	FF48181FD1D6DD23C00CABB9CA7CEF94	None	j	PATENT ABSTRACTS OF JAPAN vol. 011, no. 088 (E...)	None
739	FFB03779B3EA2A32EAB13E6E356B5341	None	j	PATENT ABSTRACTS OF JAPAN vol. 005, no. 126 (P...)	None

740 rows × 16 columns

NPL_DOI:

Digital Object Identifier for direct online access. This attribute may only be populated for these NPL types:

- Book citation (b)
- Serial / Journal / Periodical citation (s)
- World Wide Web / Internet search citation (w)

```
In [20]: npl_doi = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date,
        TLS214_NPL_PUBLN.npl_publn_end_date,
        TLS214_NPL_PUBLN.npl_publisher,
        TLS214_NPL_PUBLN.npl_page_first,
        TLS214_NPL_PUBLN.npl_page_last,
        TLS214_NPL_PUBLN.npl_abstract_nr,
        TLS214_NPL_PUBLN.npl_doi
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_doi != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_doi)
npl_res
```

Out[20]:

		npl_publn_id	xp_nr	npl_type	npl_biblio	npl_au
0	00218FFFF69C484923E71C185D811395	None	s	WILLIAMS , JOHN: 'Quantitative method for the ...	WILLIAJC	
1	002783E3EB8C9B96A3F5D94DA63E6327	None	s	BANDAL V ET AL: 'Output Feedback Fuzzy Sliding...	BANDAL '	
2	0050BD5D59AD49B09E206AE065D05EAD	None	w	TEMBURNIKAR, KARTIK W. ET AL.: 'Antiproliferat...	TEMBURNIK KARTIK W. €	
3	00582ED3DC3AAA88631B31012158693B	None	s	NA WANG: 'Lidar-Assisted Wind Turbine Feedfor...	Na W	
4	006F5D23266B815F7227AD08A67E5B1D	None	s	HOWEY D A ET AL: 'Design and performance of a ...	HOWEY D ,	
...	
3409	FF383005BBDF52458ABE4F244181EED9	None	s	LIU YONG ET AL: 'Design Considerations for MHz...	LIU YONC	
3410	FF384BCAF3197F48946896D333ECD887	None	s	R.C. SMITH ET AL: 'Improved Method of Setting ...	R.C. SMITH	
3411	FF62D5F4BE20513AFB093FC923ECEBC0	None	s	YANG TING, ZHAO LIYUAN; LIU YACHUANG; FENG SHA...	Yang Ting, Z Liyuan Yachuang; F S	
3412	FF91C236B1A923D15682F0DDCAB02411	None	s	SAID SYED A M ET AL: 'The effect of environmen...	SAID SYED E	
3413	FF9F3246C00B3503EF1014E959E9EE	None	s	AHLEM BEN YOUSSEF ET AL: 'State Observer-Based...	AHLEM I YOUSSE	

3414 rows × 17 columns

NPL_ISBN and NPL_ISSN:

Identifiers for books and journals. This attribute may only be populated for these NPL types:

- Book citation (b)
- Chemical Abstract citation (c) (if ISSN)
- Biological abstract citation (i) (if ISSN)
- Patent Abstracts of Japan (j)
- Serial / Journal / Periodical citation (s)
- Derwent citation (d) (if ISSN)
- World Wide Web / Internet search citation (w)

```
In [21]: npl_isbn = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date,
        TLS214_NPL_PUBLN.npl_publn_end_date,
        TLS214_NPL_PUBLN.npl_publisher,
        TLS214_NPL_PUBLN.npl_page_first,
        TLS214_NPL_PUBLN.npl_page_last,
        TLS214_NPL_PUBLN.npl_abstract_nr,
        TLS214_NPL_PUBLN.npl_doi,
        TLS214_NPL_PUBLN.npl_isbn,
        TLS214_NPL_PUBLN.npl_issn
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.npl_issn != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_isbn)
npl_res
```

Out[21]:

		npl_publn_id	xp_nr	npl_type	npl_biblio	npl_author
0	00582ED3DC3AAA88631B31012158693B	None	s	NA WANG: 'Lidar-Assisted Wind Turbine Feedfor...	Na Wang	
1	006CB6DDD3170568AFE2D22533DAFB8E	None	s	'COMBINED PROPULSION PLANT CHANGES GEAR.', MOT...	None	
2	006F5D23266B815F7227AD08A67E5B1D	None	s	HOWEY D A ET AL: 'Design and performance of a ...	HOWEY D A ET AL	
3	007056A3CE2F95F7268BD49D44D02E42	None	s	DEZHENG SONG ET AL: 'A Low False Negative Filte...	DEZHENG SONG ET AL	
4	0091BE1239545B3401BE5BC7166537BC	None	s	H. SPÄTH ET AL.: 'Short-time backup-power for...	H. SPÄTH et al.	
...
2644	FF62D5F4BE20513AFB093FC923ECEBC0	None	s	YANG TING, ZHAO LIYUAN; LIU YACHUANG; FENG SHA...	Yang Ting, Zhao Liyuan; Liu Yachuang; Feng Sha...	
2645	FF685E102CA37CEB5A0AB46E342D0A5E	None	s	HARDESTY R M ET AL: 'LIDAR MEASUREMENT OF TURB...	HARDESTY R M ET AL	
2646	FF6FC571E4DA3E315741787C6D233E04	None	s	PHADKE A G ET AL: 'A New Measurement Technique...	PHADKE A G ET AL	
2647	FF91C236B1A923D15682F0DDCAB02411	None	s	SAID SYED A M ET AL: 'The effect of environmen...	SAID SYED A M ET AL	
2648	FF9F3246C00B3503EF1014E959E9EE	None	s	AHLEM BEN YOUSSEF ET AL: 'State Observer- Based...	AHLEM BEN YOUSSEF ET AL	

2649 rows × 19 columns

ONLINE_AVAILABILITY:

URL or link for accessing the document online. This attribute may only be populated for these NPL types:

- Database citation (e)
- World Wide Web / Internet search citation (w)

```
In [22]: npl_online = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date,
        TLS214_NPL_PUBLN.npl_publn_end_date,
        TLS214_NPL_PUBLN.npl_publisher,
        TLS214_NPL_PUBLN.npl_page_first,
        TLS214_NPL_PUBLN.npl_page_last,
        TLS214_NPL_PUBLN.npl_abstract_nr,
        TLS214_NPL_PUBLN.npl_doi,
        TLS214_NPL_PUBLN.npl_isbn,
        TLS214_NPL_PUBLN.npl_issn,
        TLS214_NPL_PUBLN.online_availability
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.online_availability != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)
npl_res = patstat.df(npl_online)
npl_res
```

Out [22]:

	npl_publn_id	xp_nr	npl_type	npl_biblio	npl_autho
0	0003BCB82D667DABC8B4C0C7CE188095	None	w	BORUP M ; ET AL: 'General rights Copyright and...	Borup M ; E A
1	0068AD434D52BE0F0A85FDC49CCA9317	None	w	'MWPS Currently Available Second Hand Wind Tur...	Nor

2	006FA797DBC97EE50821C26629701AC7	None	w	GANTASALA SUDHAKAR ET AL: 'Detection of blade ...	Gantasa Sudhakar E A
3	00B91BF54A66F3464DEE97616A1BB616	None	w	ANONYMOUS: 'Laser cladding technology helps ma...	Anonymou
4	00D0195BEA61B610F76BB18A6BB2B6C1	None	w	RYCROFT MIKE: 'Enabling wind turbines to opera...	Rycroft Mi
...
1829	FEA92DDFD9E336CC43EB802EB7788FFC	None	w	M FRIEDMAN ET AL: 'Low- loss RF transport over	M Friedman ET A
1830	FEB03E72D60A44CD376C1934EF7C9487	None	w	CHRISTIAN BARTSCH: 'Offshore- Windpark RIFFGAT'...	Christia Barts
1831	FED40AE4BC3BA512EB4D205567804513	None	w	ALVING & FREEBERG: 'The effect of riblets on s...	Alving Freeber
1832	FFC4A7139DFB31B2BFB27D158F81C1A1	None	w	NADJA SKOPLJAK: 'TWD and Barge Master Float Co...	Nad Skoplja
1833	FFFBD1B477D2918F38526390F9C108B1	None	w	ANONYMOUS: 'Standard insulated heating tape',	ANONYMOU
				...	

1834 rows × 20 columns

ONLINE_CLASSIFICATION:

This attribute represents an online classification code, which provides thematic or categorical information about the Non-Patent Literature. This attribute may only be populated for these NPL types:

- Derwent citation (d)

```
In [23]: npl_class = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date,
        TLS214_NPL_PUBLN.npl_publn_end_date,
        TLS214_NPL_PUBLN.npl_publisher,
        TLS214_NPL_PUBLN.npl_page_first,
        TLS214_NPL_PUBLN.npl_page_last,
        TLS214_NPL_PUBLN.npl_abstract_nr,
        TLS214_NPL_PUBLN.npl_doi,
        TLS214_NPL_PUBLN.npl_isbn,
        TLS214_NPL_PUBLN.npl_issn,
        TLS214_NPL_PUBLN.online_availability,
        TLS214_NPL_PUBLN.online_classification
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.online_classification != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)
npl_res = patstat.df(npl_class)
npl_res
```

Out [23]:

		npl_publn_id	xp_nr	npl_type	npl_biblio	npl_author	npl_t
0	039E761F496A9AAE0CEE636C95B66197	None	d	DATABASE WPI Week 200365, Derwent World Patent...	None	None	↑
1	05A0FABCF432EA010B154D2403474544	None	d	DATABASE WPI Week 197739, Derwent World Patent...	None	None	↑
2	091B849378D4219D90730D622B89CC33	None	d	DATABASE WPI Week 198417, Derwent World Patent...	None	None	↑
				DATABASE WPI			

3	09BCE7207FB3D6BE0BDC77744B146B57	None	d	Section Ch Week 199827, Derwent W...	None	↑
4	0D1C75C66713B189724789FC6D17DB8C	None	d	DATABASE WPI Week 197702, Derwent World Patent...	None	↑
...
114	F31CFB91438D18467220249A7F10233D	None	d	DATABASE WPI Derwent World Patents Index; Clas...	None	↑
115	F7CF1E1821686FEF2617F68318BADC17	None	d	DATABASE WPI Week 200620, Derwent World Patent...	None	↑
116	F858A66D1A27D4DD4D90B96239B34D89	None	d	DATABASE WPI Section EI Week 201653, Derwent W...	None	↑
117	FA9408F45DD5AA6622F09953CA1AD564	None	d	DATABASE WPI Section PQ Week 9027, Derwent Wor...	None	↑
118	FD1307016181A1B53CF5866945738A1C	None	d	DATABASE WPI Week 199809, Derwent World Patent...	None	↑

119 rows × 21 columns

ONLINE_SEARCH_DATE:

Date on which the document was retrieved online. This attribute may only be populated for these NPL types:

- World Wide Web / Internet search citation (w)

```
In [24]: npl_records = (
    db.query(
        TLS214_NPL_PUBLN.npl_publn_id,
        TLS214_NPL_PUBLN.xp_nr,
        TLS214_NPL_PUBLN.npl_type,
        TLS214_NPL_PUBLN.npl_biblio,
        TLS214_NPL_PUBLN.npl_author,
        TLS214_NPL_PUBLN.npl_title1,
        TLS214_NPL_PUBLN.npl_title2,
        TLS214_NPL_PUBLN.npl_volume,
        TLS214_NPL_PUBLN.npl_editor,
        TLS214_NPL_PUBLN.npl_issue,
        TLS214_NPL_PUBLN.npl_publn_date,
        TLS214_NPL_PUBLN.npl_publn_end_date,
        TLS214_NPL_PUBLN.npl_publisher,
        TLS214_NPL_PUBLN.npl_page_first,
        TLS214_NPL_PUBLN.npl_page_last,
        TLS214_NPL_PUBLN.npl_abstract_nr,
        TLS214_NPL_PUBLN.npl_doi,
        TLS214_NPL_PUBLN.npl_isbn,
        TLS214_NPL_PUBLN.npl_issn,
        TLS214_NPL_PUBLN.online_availability,
        TLS214_NPL_PUBLN.online_classification,
        TLS214_NPL_PUBLN.online_search_date
    )
    .filter(TLS214_NPL_PUBLN.npl_publn_id != '0')
    .filter(TLS214_NPL_PUBLN.online_search_date != None)
    .order_by(TLS214_NPL_PUBLN.npl_publn_id)
)

npl_res = patstat.df(npl_records)
npl_res
```

Out [24]:

	npl_publn_id	xp_nr	npl_type	npl_biblio	npl_autho
0	0003BCB82D667DABC8B4C0C7CE188095	None	w	BORUP M ; ET AL: 'General rights Copyright and...'	Borup M ; E A
1	0068AD434D52BE0F0A85FDC49CCA9317	None	w	'MWPS Currently Available	Nor

					Second Hand Wind Tur...	
2	006FA797DBC97EE50821C26629701AC7	None	w	GANTASALA SUDHAKAR ET AL: 'Detection of blade ...	Gantasa Sudhakar E A	
3	00B91BF54A66F3464DEE97616A1BB616	None	w	ANONYMOUS: 'Laser cladding technology helps ma...	Anonymou	
4	00CE5A87311FDDC866AE0BFBDD7C2EF9	None	w	GILL A F ET AL: 'Effect of variation in fibre ...	GILL A F E A	
...	
1732	FEA92DDFD9E336CC43EB802EB7788FFC	None	w	M FRIEDMAN ET AL: 'Low- loss RF transport over	M Friedma ET A	
...	
1733	FEB8FF27666BF8F51906D668B594F493	None	w	WECKX SAM ET AL: 'Load Balancing With EV Charg...	WECKX SAI ET A	
1734	FED40AE4BC3BA512EB4D205567804513	None	w	ALVING & FREEBERG: 'The effect of riblets on s...	Alving Freeber	
1735	FFC4A7139DFB31B2BFB27D158F81C1A1	None	w	NADJA SKOPLJAK: 'TWD and Barge Master Float Co...	Nad Skoplja	
1736	FFFBD1B477D2918F38526390F9C108B1	None	w	ANONYMOUS: 'Standard insulated heating tape',	ANONYMOU	
				

1737 rows × 22 columns