

High-level accessibility review – LAA (ArXiv Platform)

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July 11, 2024



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ArXiv Platform

Summary

Top 3 problems for the ArXiv Platform

This high-level assessment covers limited portions and functionality of the ArXiv Platform. The assessment revealed issues with assistive technology compatibility, resulting in some users missing information required to understand content, states and operate functions. It is important to keep in mind that the findings represent a high-level assessment, and do not reflect the results of a Deque Comprehensive Web Assessment.

1. **Contrast Minimum** – Search link text on all pages does not have enough contrast and this appears multiple times on several pages.
2. **Non-text Contrast** – There are interactive elements throughout the pages that have contrast issues for both the initial state as well as the focus state.
3. **Keyboard** – Tabs throughout the site do not function with the keyboard alone. This makes a large portion of the content inaccessible to many users.

Accessibility findings

Project wide issues

The issues presented in this section were identified in multiple pages and are recorded here to avoid repetition. These are applicable to each screen. Due to particularities, similar issues are still reported on a page per page basis, where applicable.

Automated findings using Axe

Issues found through automated testing come from the Axe plugin, an open-source accessibility testing tool that is available for Chrome, Firefox and Edge. Details here: <https://www.deque.com/products/axe/>.

There were no site wide issues found using automated scans.

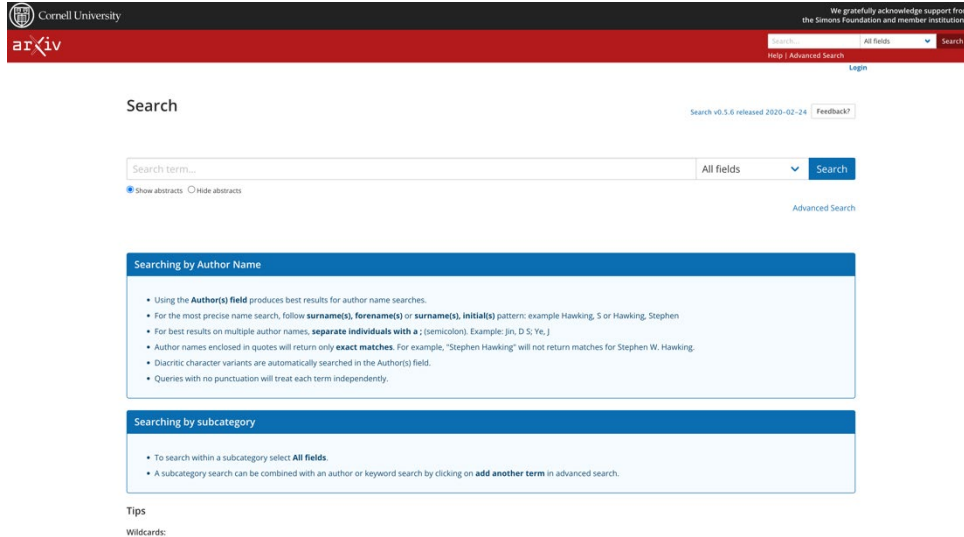
Additional manual findings using NVDA screen reader

1. **SC 1.4.3 AA** – Contrast Minimum – On the red header bar on each page the placeholder text “Search” (#E4E4E4) in the search field only has a 1.3:1 contrast ratio with the background (#ffffff) and must have at least a 4.5:1 contrast ratio.
2. **SC 1.4.11 AA** – Non-text contrast – On the red header bar on each page the focus indicator (#913644) on the “Search button” only has a contrast ratio of 1.1:1 with the background (#B21A1B) behind the button and must have at least 3:1 contrast.
3. **SC 3.3.2 A** – Labels or instructions – On the red header bar on each page the “Search field” is only labelled by the placeholder text but the placeholder text disappears when the user interacts with the field. The label should remain visible when the user interacts with the field.

1. Landing Page

Source: <https://arxiv-org.offcampus.lib.washington.edu/search/>

Test case: Test initial interface/landing page to ensure menus, sub-menus, search box, images, icons, etc. are accessible.



Automated findings using Axe

1. **SC 4.1.2 A** – Name, Role, Value – The form tag surrounding the search box has an aria-role="search" when it should be role="search".
2. **SC 4.1.2 A** – Name, Role, Value – The select tag for "field" has a hidden label that cannot be read by screen reader. Display none is used on the label.

Additional manual findings using NVDA screen reader

4. **SC 1.4.3 AA** – Contrast Minimum – The placeholder text "Search" (#E4E4E4) in the search field only has a 1.3:1 contrast ratio with the background (#ffffff) and must have at least a 4.5:1 contrast ratio.
5. **SC 1.4.11 AA** – Non-text contrast – The border (#E4E4E4) on the "search field" only has a 1.3:1 contrast ratio with the background (#ffffff) and must have at least a 3:1 contrast ratio.
6. **SC 1.4.11 AA** – Non-text contrast – The focus indicator (#B2CBE4) on the "Search button" only has a contrast ratio of 1.7:1 with the background (#ffffff) behind the button and must have at least 3:1 contrast.
7. **SC 3.3.2 A** – Labels or instructions – Search field is only labelled by the placeholder text, but the placeholder text disappears when the user interacts with the field. The label should remain visible when the user interacts with the field.

2. Search Results – Momentum

Source: https://arxiv.org/offcampus.lib.washington.edu/search/?query=momentum&searchtype=all&abstracts=show&order=announced_date_first&size=50

Test case: From the initial landing page, conduct a search for: momentum. Test search results page, including results per page and sort by options.

The screenshot shows the arXiv search results page for the query 'momentum'. The page header includes the Cornell University logo and the arXiv logo. A search bar at the top right contains the text 'momentum' and a 'Search' button. Below the search bar, there are options for 'Show abstracts' and 'Hide abstracts'. The search results are displayed in a list format, with the first three results visible. The first result is titled 'Pseudospectra of complex momentum modes' and is categorized under 'General Relativity and Quantum Cosmology'. The second result is titled 'Light nuclei photoproduction in relativistic heavy ion ultraperipheral collisions' and is categorized under 'High Energy Physics - Phenomenology'. The third result is titled 'Surprising gender biases in GPT' and is categorized under 'Computer Science - AI'. The page also includes a pagination control showing 'Showing 1–50 of 75,431 results for all: momentum' and a 'Next' button.

Automated findings using Axe

1. **SC 4.1.2 A** – Name, Role, Value – The form tag surrounding the search box has an aria-role="search" when it should be role="search".
2. **SC 4.1.2 A** – Name, Role, Value – The select tag for "field" has a hidden label that cannot be read by screen reader. Display none is used on the label.

Additional manual findings using NVDA screen reader

1. **SC 1.4.3 AA** – Contrast Minimum – The placeholder text "Search" (#E4E4E4) in the search field only has a 1.3:1 contrast ratio with the background (#ffffff) and must have at least a 4.5:1 contrast ratio.
2. **SC 1.4.11 AA** – Non-text contrast – The border (#E4E4E4) on the "search field" only has a 1.3:1 contrast ratio with the background (#ffffff) and must have at least a 3:1 contrast ratio.
3. **SC 1.4.11 AA** – Non-text contrast – The focus indicator (#B2CBE4) on the "Search button" only has a contrast ratio of 1.7:1 with the background (#ffffff) behind the button and must have at least 3:1 contrast.
4. **SC 2.4.6 AA** – Headings and Labels – On each search result there are links to "pdf", "ps", and "other". The link text is duplicated for each search result creating multiple links with the same name. The accessible name for each of these needs to include additional information such as the document title to distinguish which pdf, ps or other file is being opened.
5. **SC 2.4.7 AA** – Focus Visible – The selected page in the search results pagination is missing a focus indicator.
6. **SC 3.3.2 A** – Labels or instructions – Search field is only labelled by the placeholder text, but the

placeholder text disappears when the user interacts with the field. The label should remain visible when the user interacts with the field.

3. Individual Search Results Landing Page

Source: <https://arxiv-org.offcampus.lib.washington.edu/abs/2407.04691>

Test case: Select "Exceptional Points and Braiding Topology in Non-Hermitian Systems with long-range coupling" test individual search result landing page. Switch between tabs (from Bibliographic Tools to Related Papers) and test actual PDF.

The screenshot shows the arXiv search results page for the paper "Exceptional Points and Braiding Topology in Non-Hermitian Systems with long-range coupling" by S. M. Rafi-Ul-Islam, Zhuo Bin Siu, Md. Saddam Hossain Razo, and Mansoor B.A. Jalil. The page includes a search bar, navigation tabs (Bibliographic Tools, Code, Data, Media, Demos, Related Papers, About arXivLabs), and a section for "Bibliographic and Citation Tools" with three toggleable options: Bibliographic Explorer, Litmaps, and scite Smart Citations. The right sidebar contains "Access Paper" options (View PDF, HTML, TeX Source, etc.), "Current browse context", "References & Citations", and "Export BibTeX Citation".

Automated findings using Axe

1. **SC 1.4.1 A** – Link Color Contrast – blue link text (#0000ee) does not have at least 3:1 contrast (2.23:1) with the surrounding black text (#000000). This occurs repeatedly throughout the page. Link either needs more contrast or an additional differentiator needs added such as an underline.
2. **SC 4.1.2 A** – Name, Role, Value – Above the read header bar there is a link set to `aria-hidden="true"`. The focusable element should be set to `tabindex="-1"` or removed from the DOM.

Additional manual findings using NVDA screen reader

1. **SC 1.4.11 AA** – Non-text contrast – The toggles (#ffffff) only has a 1.6:1 contrast ratio with the background (#CCCCCC) and must have at least a 3:1 contrast ratio.
2. **SC 2.2.1 A** – Keyboard – The tabs (Bibliographic Tools, Demos, Related Papers, etc.) are not accessible with the keyboard alone.
3. **SC 2.4.7 AA** – Focus Visible – The toggles receive focus but do not have a focus indicator.

4. Advanced Search

Source: https://arxiv.org.offcampus.lib.washington.edu/search/advanced?terms-0-term=momentum&terms-0-field=all&size=50&order=-announced_date_first

Test case: Test advanced search page.

Advanced Search

Search terms(s)
momentum All fields Search

Subject
All classifications will be included by default.
 Computer Science (cs) Physics all
 Economics (econ) Quantitative Biology (q-bio)
 Electrical Engineering and Systems Science (eess) Quantitative Finance (q-fin)
 Mathematics (math) Statistics (stat)
 Include cross-listed papers Exclude cross-listed papers

Date
 All dates
 Past 12 months
 Specific year | YYYY
 Date range
From | YYYY-MM-DD to | YYYY-MM-DD
When limiting by date range, the lower bound of the "from" date and the upper bound of the "to" date are used.
For example, searching with From: 2012-02 and To: 2013 will search for papers submitted from 2012-02-01 to 2013-12-31.

Searching by Author Name

- Using the **Author(s)** field produces best results for author name searches.
- For the most precise name search, follow **surname(s)**, **forename(s)** or **surname(s), initial(s)** pattern: example Hawking, S or Hawking, Stephen
- For best results on multiple author names, **separate individuals with a ;** (semicolon). Example: jn, D S; Ye, J
- Author names enclosed in quotes will return only **exact matches**. For example, "Stephen Hawking" will not return matches for Stephen W. Hawking.
- Diacritic character variants are automatically searched in the Author(s) field.
- Queries with no punctuation will treat each term independently.

Searching by subcategory

- To search within a subcategory select **All fields**.
- A subcategory search can be combined with an author or keyword search by clicking on **add another term** in advanced search.

Tips

Wildcards:

- Use ? to replace a single character or * to replace any number of characters.
- Can be used in any field, but not in the first character position. See Journal References tips for exceptions.

Expressions:

Automated findings using Axe

1. **SC 4.1.2 A** – Name, Role, Value – When an additional search term is added an “And/OR” select element appears but the select element is missing an accessible name.

Additional manual findings using NVDA screen reader

1. **SC 1.4.3 AA** – Contrast Minimum – The placeholder text “Search”, “specific year”, “from”, “to” (#E4E4E4) in the search field only has a 1.3:1 contrast ratio with the background (#ffffff) and must have at least a 4.5:1 contrast ratio.
2. **SC 1.4.11 AA** – Non-text contrast – The border (#E4E4E4) on the “search”, “specific year”, “from”, and “to” fields only have a 1.3:1 contrast ratio with the background (#ffffff) and must have at least a 3:1 contrast ratio.
3. **SC 1.4.11 AA** – Non-text contrast – The focus indicator (#B2CBE4) on the “Search button” only has a contrast ratio of 1.7:1 with the background (#ffffff) behind the button and must have at least 3:1 contrast.
4. **SC 3.3.2 A** – Labels or instructions – Search field is only labelled by the placeholder text, but the placeholder text disappears when the user interacts with the field. The label should remain visible when the user interacts with the field.