High-level accessibility review – BTAA

(MathSciNet - final version)

Primary Point of Contact

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MathSciNet

Summary (top 3 problems for MathSciNet)

This assessment covers the MathSciNet application. The assessment revealed significant problems with screen reader compatibility and keyboard-only navigation. Screen reader users are not provided with critical information needed for understanding forms. Additionally, repetitive blocks of content cannot be skipped. Because of this, people with motor disabilities will likely find the application very difficult to use.

1. **Forms are missing labels –** Most form fields are missing programmatic labels. A screen reader user will not know the purpose of a form field when it is not programmatically associated with a visible label. Because of this, many screen reader users will find the application very difficult to use.
2. **Search results page is refreshed after changing a filter** – The entire page is refreshed after changing the value of a filter. This forces blind screen reader users and people with motor disabilities to start back at the top of the page every time a filter is changed. Many users will find this very frustrating and time consuming. Many will most likely find the application difficult to use.
3. **Missing landmarks, heading structure, and skip links –** Screen reader software uses landmarks and heading structure to provide an overview of the page. These structures also let blind users jump to different sections of a page and quickly access information that might otherwise take a long time to navigate to. Additionally, most people with motor disabilities will use a keyboard or a device that emulates key strokes to navigate pages. The site contains repetitive blocks of content that cannot be skipped, such as site navigation and search result filters. Furthermore, keyboard-only users will not be able to use the search result filters because there is no visual indication of focus within that section of the page.

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 reported on a page per page basis, where applicable.

Automated findings using Axe

- **SC 1.4.3 –** The name of the logged in user does must meet contrast ratio requirements
- **SC 1.3.1 –** Form fields must have programmatic labels (found on many pages)

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

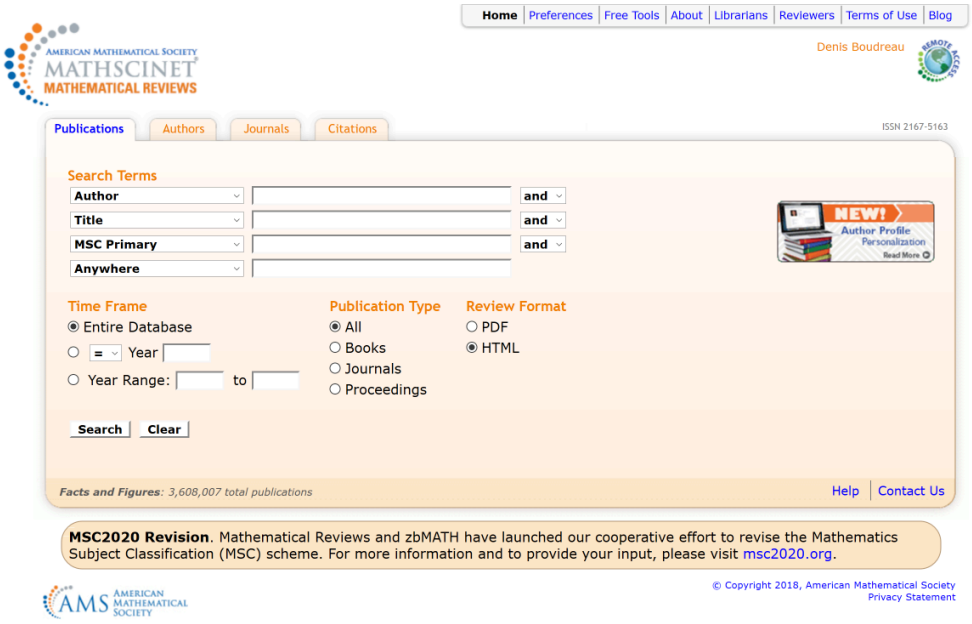
Additional manual findings using NVDA screen reader

- **SC 2.4.1 –** Pages must contain a skip link, proper heading structure, and/or landmarks
- **SC 3.2.2 –** Changing the value of form controls must not result in the page automatically refreshing without prior notice

1. MathSciNet landing page

Source: https://mathscinet.ams.org/mathscinet/index.html

Test case: Test initial landing page, including links at top-right, four tabs & navigating between them (publications, authors, journals, citations), and searchboxes/dropdowns/radio buttons under the Publications tab).



Automated findings using Axe

- **SC 1.3.1 –** Form fields must have programmatic labels

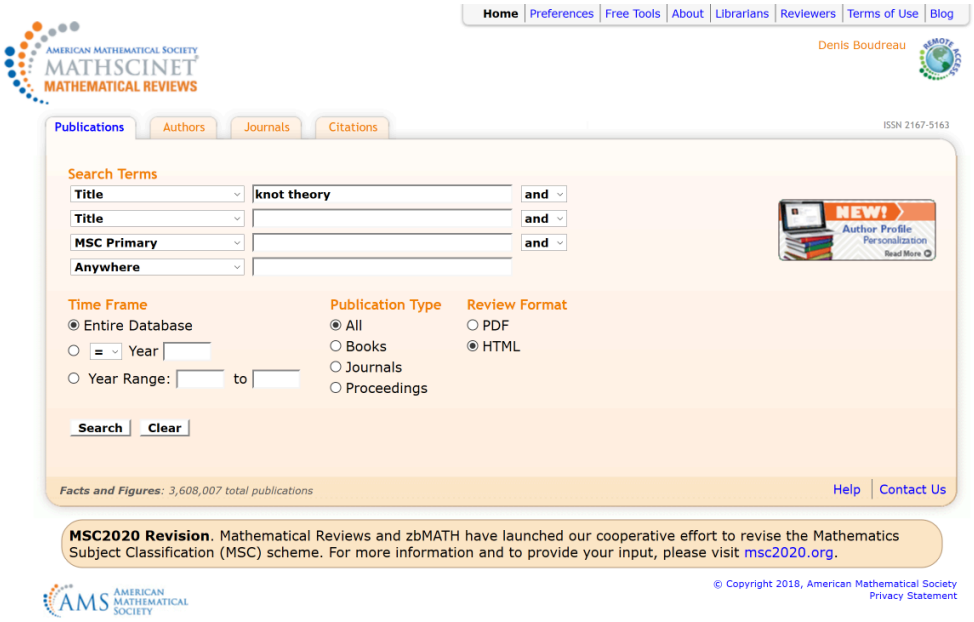
Additional manual findings using NVDA screen reader

- **SC 1.3.1 –** The page should contain a heading structure that does not skip levels.
- **SC 1.3.1 –** The page should contain landmark roles.
- **SC 1.3.1 –** Groups of radio buttons and form fields must have a programmatic group name.
- **SC 1.4.3 –** Tab titles and heading elements in the form must meet contrast ratio requirements.
- **SC 2.4.1 –** The page must contain a skip link, proper heading structure, and/or landmarks.
- **SC 2.4.3 –** Focus order must be logical when switching to the “authors” tab. Links at the bottom of the form are skipped.
- **SC 4.1.2 –** Tab panel should use ARIA roles and properties to convey the widget’s semantics**.**

1a. MathSciNet landing page, search

Source: https://mathscinet.ams.org/mathscinet/index.html

Test case: From initial interface face, which lands on Publications tab, enter “knot theory” into the first search box and change dropdown from ‘author’ to ‘title’.

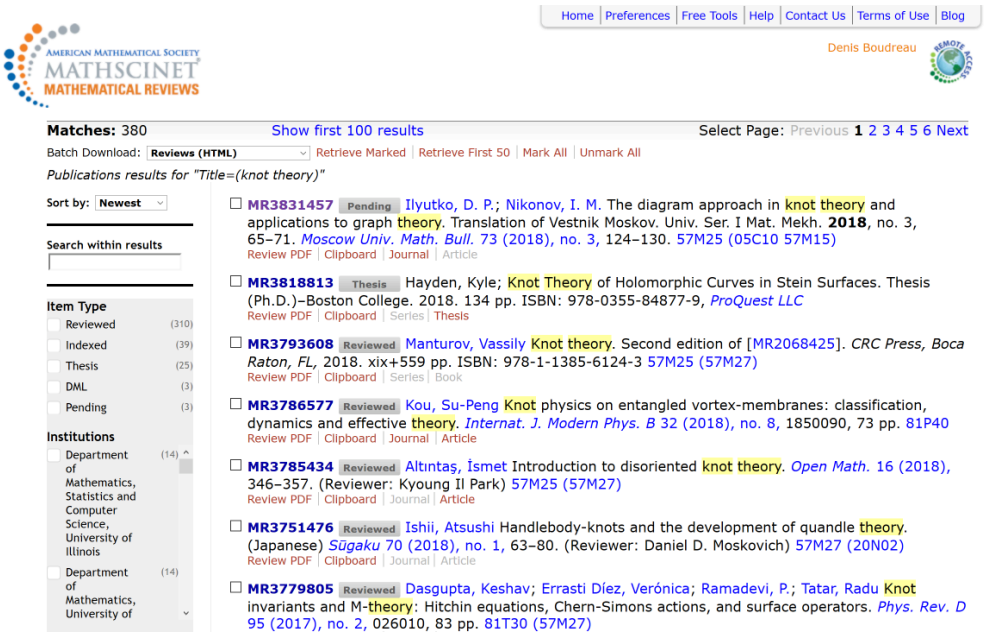


Note
We did not report separate findings for this task. All of the findings under section 1 “MathSciNet landing page” also apply to this task and no additional issues were found.

2. MathSciNet search results

Source:
https://mathscinet.ams.org/mathscinet/search/publications.html?pg4=TI&s4=knot+theory&co4=AND&pg5=TI&s5=&co5=AND&pg6=PC&s6=&co6=AND&pg7=ALLF&s7=&co7=AND&dr=all&yrop=eq&arg3=&yearRangeFirst=&yearRangeSecond=&pg8=ET&s8=All&review_format=html&Submit=Search

Test case: Test results page, including: sort by dropdown (on left), and select "reviewed" as item type and 2018 from year limited on left with mouse-only if possible.



Automated findings using Axe

- **SC 1.4.3 –** Content must meet contrast ratio requirements, including the number associated with each filter and all grayed out text.
- **SC 1.3.1 –** Form fields must have programmatic labels.

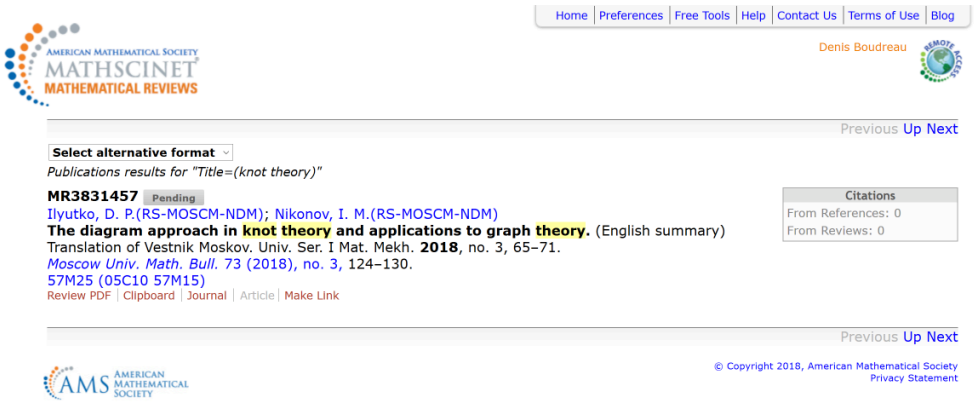
Additional manual findings using NVDA screen reader

- **SC 1.3.1 –** The page should contain a logical heading structure.
- **SC 1.3.1 –** The page should contain landmark roles.
- **SC 1.3.1 –** The list of results must be marked up as a list.
- **SC 1.3.1 –** Groups of checkboxes must have a programmatic group name.
- **SC 2.1.1 –** Content must be usable by keyboard alone. The "pending", "thesis", and "reviewed" tooltips can only be opened with a mouse.
- **SC 2.4.1 –** The page must contain a skip link, proper heading structure, and/or landmarks.
- **SC 2.4.7 –** Focus must be visible when navigating the filters.
- **SC 3.2.2 –** Modifying the filters and search options must not submit the form without prior notice.

3. MathSciNet publication result detail page

Source:
https://mathscinet.ams.org/mathscinet/search/publdoc.html?arg3=&co4=AND&co5=AND&co6=AND&co7=AND&dr=all&pg4=TI&pg5=TI&pg6=PC&pg7=ALLF&pg8=ET&review_format=html&s4=knot%20theory&s5=&s6=&s7=&s8=All&sort=Newest&vfpref=html&yearRangeFirst=&yearRangeSecond=&yrop=eq&r=1&mx-pid=3831457

Test case: Select one of the search results by selecting the MR (followed by numbers) to test a individual record page.



Automated findings using Axe

- **SC 1.4.3 –** Content must meet contrast ratio requirements, including all grayed out text.
- **SC 1.3.1 –** Form fields must have programmatic labels.

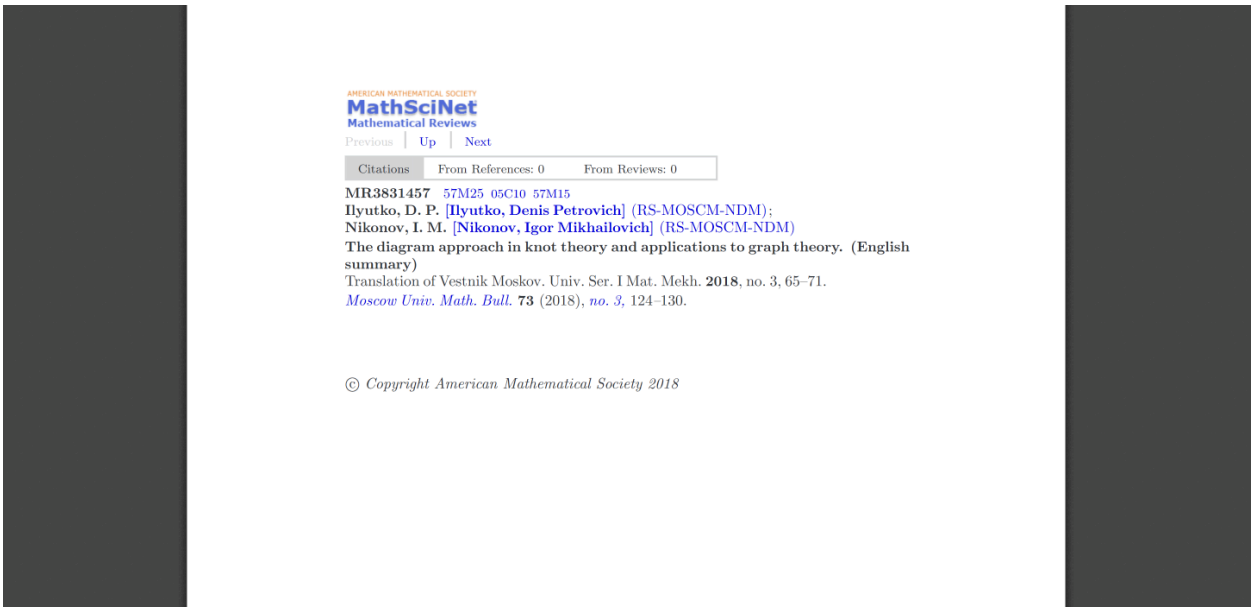
Additional manual findings using NVDA screen reader

- **SC 1.3.1 –** The page should contain a logical heading structure.
- **SC 1.3.1 –** The page should contain landmark roles.
- **SC 2.1.1 –** Content must be usable by keyboard alone. The “pending” tooltip can only be opened with a mouse.
- **SC 2.4.1 –** The page must contain a skip link, proper heading structure, and/or landmarks.
- **SC 2.4.2 –** The page title must accurately describe the purpose of the page.
- **SC 3.2.2 –** Modifying the value of a select element must not load a new page without prior notice.

4. MathSciNet PDF

Source :
https://mathscinet.ams.org/mathscinet/pdf/3831457.pdf?arg3=&co4=AND&co5=AND&co6=AND&co7=AND&dr=all&mx-pid=3831457&pg4=TI&pg5=TI&pg6=PC&pg7=ALLF&pg8=ET&r=1&review_format=html&s4=knot%20theory&s5=&s6=&s7=&s8=All&sort=Newest&vfpref=html&yearRangeFirst=&yearRangeSecond=&yrop=eq

Test case: From an individual record page, test full text PDF by selecting "review PDF" link – is it an accessible PDF?



Specific findings about the PDF download using NVDA screen reader

The PDF shared is an untagged PDF document, with very limited capabilities in terms of accessibility. Some of the issues found in the PDF document include:

- The document is not tagged and contains no tagging structure.
- The document does not have any headings to help make sense of the content structure.
- No semantics are provided to help screen reader users navigate through the PDF.
- Images are not marked up and provided with appropriate alt text.
- Screen readers struggle reading through the content as it currently is presented.
- The document shows its filename instead of the document title by default.
- The primary language of the document is not identified as being English.
- The document is not assigned a meaningful descriptive title.
- Etc.