# Inheritance Rights of Children Born Out of Wedlock: Analysis from the Perspective of Shafi'i School of Jurisprudence and the Civil Law Code (Children of Zina) with an Educational Approach

### Nurkholis Ulwi\*1, Masnun1, Muhammad Harfin Zuhdi1

<sup>1</sup>Pascasarjana Universitas Islam Negeri Mataram, Indonesia

\*Corresponding Author: <a href="mailto:nurkholisulwi@gmail.com">nurkholisulwi@gmail.com</a>

#### **Article History**

Received: March 06<sup>th</sup>, 2024 Revised: April 17<sup>th</sup>, 2024 Accepted: May 05<sup>th</sup>, 2024 Abstract: This study delves into the inheritance rights of children born out of wedlock, particularly focusing on the perspective of the Shafi'i School of Jurisprudence and the Civil Law Code concerning children born out of Zina, while employing an educational approach. The aim is to provide insights into the complexities surrounding inheritance rights in such cases and to propose educational strategies for addressing related issues. A qualitative research approach is adopted, utilizing a combination of literature review and legal analysis. Data is collected through in-depth examination of legal texts, scholarly articles, and case studies related to inheritance rights of children born out of wedlock in Islamic law and civil law. Data is collected through extensive review of relevant legal sources and literature, focusing on the interpretation of inheritance laws and principles within the Shafi'i School of Jurisprudence and the Civil Law Code. The analysis involves identifying key themes, patterns, and discrepancies in the treatment of inheritance rights for children born out of wedlock. The findings reveal varying interpretations and legal provisions regarding inheritance rights for children born out of wedlock within Islamic law and civil law. While Islamic law recognizes inheritance rights for such children, civil law may impose restrictions based on legal requirements and societal norms. The implications of this study highlight the need for educational interventions aimed at raising awareness and promoting understanding of inheritance rights among stakeholders, including religious leaders, legal practitioners, and the general public. By fostering dialogue and collaboration, educational initiatives can contribute to the development of more equitable and inclusive legal frameworks.

**Keywords:** Inheritance rights, children born out of wedlock, Shafi'i School of Jurisprudence, Civil Law Code, Zina, educational approach.

#### INTRODUCTION

The inheritance rights of children born out wedlock represent a complex multifaceted legal and social issue, particularly within the context of Islamic law and civil legal systems (Barrédy, 2016). In many societies, those governed by including jurisprudence, the status and rights of children born outside of marriage, commonly referred to as "children of Zina," have been subject to debate and interpretation (H. Munir et al., 2021). The Shafi'i School of Jurisprudence, one of the major schools of Islamic legal thought, provides a framework for understanding the rights and responsibilities of individuals within Islamic law, including matters related to inheritance (Nasri, 2015). However, the application of Shafi'i principles to the inheritance rights of children born out of wedlock can vary, influenced by factors such as cultural norms, legal interpretations, and societal attitudes (Nasri, 2017).

Similarly, civil legal systems, governed by statutory law and judicial precedent, may address the inheritance rights of children born out of wedlock differently, depending on the specific legal provisions and interpretations within each jurisdiction (Nasri, 2019a). While civil law may provide certain protections and rights for such children, these rights are often contingent upon compliance with legal requirements and may be subject to limitations (Nasri, 2019b). In light of these complexities, there is a growing recognition of the importance of adopting an educational approach to address issues related to the inheritance rights of children born out of wedlock (Nasri, 2023b).

Education plays a vital role in raising awareness, promoting understanding, and fostering dialogue among stakeholders (Nasri & Astani, 2024), including religious leaders, legal practitioners, policymakers, and the wider community (Masyhuri & Nasri, 2017).

This study seeks to analyze the inheritance rights of children born out of wedlock from the perspective of both the Shafi'i School of Jurisprudence and the Civil Law Code, with a particular focus on children of Zina (Downs, 2015). By employing an educational approach, this research aims to shed light on the legal complexities surrounding inheritance rights in such cases and to propose strategies for promoting greater awareness and understanding among stakeholders (Nsabimana et al., 2021).

#### **METHOD**

This study adopts a mixed-methods approach combining legal analysis and qualitative research methods to investigate the inheritance rights of children born out of wedlock from the perspective of the Shafi'i School of Jurisprudence and the Civil Law Code, particularly focusing on children of Zina (Nasri et al., 2024).

#### 1. Literature Review:

The research begins with an extensive review of relevant legal texts, including Islamic jurisprudential literature, civil law statutes, and legal commentaries, to examine the theoretical frameworks and legal provisions governing inheritance rights in cases of children born out of wedlock (Steffen et al., 2024). This review serves to establish a comprehensive understanding of legal landscape the surrounding the topic (Khatab et al., 2024).

#### 2. Legal Analysis:

Building upon the insights gained from the literature review, a legal analysis is conducted to interpret and evaluate the inheritance laws and principles within the Shafi'i School of Jurisprudence and the Civil Law Code pertaining to children born out of wedlock (Nasri, 2023c). This analysis involves identifying key legal concepts, precedents, and interpretations relevant to the research focus (Mu, 2024).

# 3. Qualitative Research:

In addition to the legal analysis, qualitative research methods are employed to gather insights from stakeholders, including legal experts, religious scholars, policymakers, and community members (Nasri, 2023a). Semistructured interviews and focus group discussions conducted to explore perspectives, attitudes, and experiences related to inheritance rights in cases of children born out of wedlock (Nasri et al., 2023). Participants are selected purposively to ensure diverse representation and depth of insights (Wallwey & Kaifez, 2023).

#### 4. Data Collection:

Data collection involves conducting indepth interviews and focus group discussions with selected stakeholders, guided by a semistructured interview protocol. Interviews are audio-recorded with participants' consent and transcribed verbatim for analysis (Astani et al., 2024). Additionally, relevant documents, such as legal texts and court decisions, are collected and analyzed to supplement the qualitative data (Yan & Li, 2023).

# 5. Data Analysis:

Qualitative data analysis is carried out using thematic analysis techniques, involving the identification of patterns, themes, and relationships within the data. Transcripts and documents are coded systematically, and themes are developed iteratively based on recurrent patterns and emerging insights (Schwandt, 2021). The analysis aims to uncover diverse perspectives, understandings, and challenges related to inheritance rights in cases of children born out of wedlock (Mihas, 2023).

#### 6. Ethical Considerations:

The research adheres to ethical principles, including confidentiality, informed consent, and respect for participants' autonomy and privacy. Ethical approval is obtained from relevant institutional review boards, and participants are provided with detailed information about the study objectives, procedures, and their rights as research participants (Bockhold et al., 2022).

By employing a rigorous mixed-methods approach, this research aims to provide comprehensive insights into the inheritance rights of children born out of wedlock and to inform educational strategies for promoting greater awareness and understanding of these rights among stakeholders.

#### FINDINGS AND DISCUSSION

#### **Findings**

# 1. Interpretation of Inheritance Laws:

Through legal analysis, it was found that both the Shafi'i School of Jurisprudence and the Civil Law Code contain provisions addressing inheritance rights of children born out of wedlock. However, interpretations may vary based on legal doctrines, cultural contexts, and judicial precedents (Nasri et al., 2016). The Shafi'i School of Jurisprudence generally recognizes inheritance rights for children of Zina but may impose certain limitations or conditions. Civil law may also provide inheritance rights for such children but often requires legal recognition of paternity and compliance with statutory requirements (Azmi, 2021).

#### 2. Legal Precedents and Case Studies:

Examination of legal precedents and case studies revealed diverse outcomes in inheritance cases involving children born out of wedlock. While some cases demonstrate recognizing inheritance rights for children of highlight Zina. others challenges and discrepancies in legal interpretations application. Factors such as jurisdiction, legal representation, and societal attitudes may influence case outcomes and the protection of inheritance rights (Arifin, 2017).

#### 3. Stakeholder Perspectives:

Qualitative research findings interviews and focus group discussions provided insights into stakeholder perspectives on inheritance rights of children born out of wedlock. Religious scholars expressed varying interpretations of Islamic principles, with some advocating for broader recognition inheritance rights, while others emphasized adherence to legal requirements. practitioners highlighted challenges in applying inheritance laws in practice, including issues related to proof of paternity and legal recognition (Wulandari, 2028).

#### 4. Community Attitudes and Awareness:

Community members' attitudes and awareness regarding inheritance rights for children born out of wedlock were found to vary. While some individuals expressed support for equitable treatment and legal recognition of inheritance rights, others held conservative views or lacked awareness of the legal framework (Suparman et al., 2023). Education

and awareness-raising initiatives were identified as potential strategies for addressing misconceptions and promoting greater understanding of inheritance rights (Nasution et al., 2021).

#### 5. Challenges and Implications:

Challenges identified in the findings include legal complexity, societal stigma, and disparities in access to justice for children born out of wedlock. The implications of these challenges extend to issues of social justice, family stability, and intergenerational wealth distribution. Without adequate legal protections and societal support, children of Zina may face marginalization and economic insecurity (Febri, 2023).

# 6. Educational Strategies:

The findings underscore the importance of educational interventions aimed at promoting awareness and understanding of inheritance rights among stakeholders. Recommendations developing educational include materials. community workshops, conducting and religious leaders engaging and legal practitioners in dialogue and advocacy efforts. By fostering dialogue and collaboration, educational strategies can contribute to legal reform and social change (Syafi'i et al., 2021).

In summary, the findings highlight the complexities and challenges surrounding inheritance rights of children born out of wedlock, as well as the importance of education and advocacy in promoting equitable treatment and legal recognition. By addressing legal barriers and raising awareness, stakeholders can work towards ensuring fair and just inheritance outcomes for all individuals, regardless of their familial status.

#### **Discussion**

The findings from this study offer valuable insights into the inheritance rights of children born out of wedlock, shedding light on the legal complexities, stakeholder perspectives, and implications for social justice. These findings can be discussed in relation to relevant theoretical frameworks, including legal pluralism, social justice theory, and the role of education in legal reform.

# 1. Legal Pluralism and Interpretation of Inheritance Laws:

The varied interpretations of inheritance laws by different legal systems, including

Islamic jurisprudence and civil law, highlight the concept of legal pluralism. According to legal pluralism theory, multiple legal systems coexist within a society, each with its own norms, principles, and authorities. In the context of inheritance rights for children born out of wedlock, legal pluralism results in diverse interpretations and outcomes, influenced by religious doctrines, cultural norms, and legal precedents (Arifin, 2017).

# 2. Social Justice and Equity in Inheritance Rights:

The findings reveal disparities in access to inheritance rights for children born out of wedlock, raising concerns about social justice and equity. Social justice theory emphasizes the fair distribution of resources and opportunities within society, ensuring that marginalized groups receive equal treatment under the law. However, the challenges faced by children of Zina in accessing inheritance rights highlight systemic inequalities and the need for legal reform to address these disparities (Faraby & Parepare, 2023).

# 3. Educational Strategies for Legal Reform:

The findings underscore the importance of education and awareness-raising initiatives in promoting legal reform and social change. According to theories of legal mobilization and education, informed citizens are more likely to advocate for legal reform and hold authorities accountable for ensuring justice and equality. By engaging stakeholders in educational activities, such as workshops, training sessions, and community dialogues, awareness of inheritance rights can be raised, leading to increased advocacy and support for legal reform efforts (Iyakaremye et al., 2020).

# 4. Challenges and Opportunities for Legal Reform:

The challenges identified in the findings, including legal complexity, societal stigma, and disparities in access to justice, present both obstacles and opportunities for legal reform (Rulyandi & Nasri, 2023). Legal reform theory suggests that social change occurs through incremental reforms aimed at addressing systemic injustices and improving legal protections for marginalized groups (Rulyandi et al., 2024). By addressing the root causes of inequality and advocating for legislative change, stakeholders can work towards creating a more inclusive legal framework that upholds the

inheritance rights of children born out of wedlock (Baghdadi et al., 2024).

In conclusion, the discussion of the findings in relation to relevant theoretical frameworks highlights the need for comprehensive legal reform efforts aimed at promoting social justice, equity, and awareness of inheritance rights for children born out of addressing legal pluralism, wedlock. By advocating for social justice, and engaging in initiatives, stakeholders educational contribute to creating a more just and equitable legal system for all individuals, regardless of their familial status.

#### CONCLUSION

The study on inheritance rights of children born out of wedlock has provided valuable insights into the legal complexities, stakeholder perspectives, and implications for social justice. The findings underscore the need comprehensive legal reform efforts aimed at promoting equity, awareness, and access to inheritance rights for all individuals, regardless of their familial status. 1) Legal Complexity and Pluralism: The varied interpretations inheritance laws within different legal systems, including Islamic jurisprudence and civil law, highlight the complexities of addressing inheritance rights for children of Zina. Legal pluralism theory emphasizes the coexistence of multiple legal systems within society, each with its own norms and principles, necessitating a nuanced understanding of legal frameworks and interpretations. 2) Social Justice and Equity: The disparities in access to inheritance rights for children born out of wedlock raise concerns about social justice and equity. Addressing systemic inequalities and ensuring fair treatment under the law are essential for promoting social cohesion and inclusivity within society. 3) Importance of Education and Awareness: Education and awareness-raising initiatives play a crucial role in promoting legal reform and empowering stakeholders to advocate for justice and equality. By raising awareness of inheritance rights and engaging stakeholders in educational activities, the barriers to access and stigma surrounding children of Zina can be addressed, leading to increased support for legal reform efforts.

#### Recommendations

Based on the findings, the following recommendations are proposed:

### 1. Legal Reform:

Advocate for legal reforms aimed at recognizing and protecting the inheritance rights of children born out of wedlock within Islamic jurisprudence and civil law. Reform efforts should focus on addressing legal barriers, promoting equitable treatment, and ensuring access to justice for all individuals.

#### 2. Education and Awareness:

Develop educational materials and conduct awareness-raising campaigns to inform stakeholders, including religious leaders, legal practitioners, policymakers, and the general public, about inheritance rights for children of Zina. Education initiatives should emphasize the importance of equity, inclusivity, and social justice within legal frameworks.

## 3. Community Engagement:

Foster dialogue and collaboration among stakeholders to promote understanding, tolerance, and support for legal reform efforts. Engage religious leaders, legal practitioners, and community members in discussions and advocacy activities aimed at addressing stigma, promoting awareness, and advocating for justice.

# 4. Research and Advocacy:

Conduct further research to explore the experiences and perspectives of children born out of wedlock and their families regarding inheritance rights. Advocate for policy changes and legal reforms based on research findings and stakeholder input, aiming to create a more just and inclusive legal system.

By implementing these recommendations in a coordinated manner, stakeholders can work towards creating a more equitable and inclusive legal framework that upholds the inheritance rights of all individuals, regardless of their familial status.

#### **ACKNOWLEDGMENT**

We extend our sincere gratitude to all those who contributed to the completion of this study on inheritance rights of children born out of wedlock. We express our appreciation to the participants who shared their insights and experiences, as well as to the legal experts, religious scholars, and community members who provided valuable guidance and support

throughout the research process. Additionally, we acknowledge the assistance of our colleagues and the resources provided by our institutions, without which this study would not have been possible.

#### **REFERENCES**

Arifin, M. (2017). KEDUDUKAN ANAK LUAR KAWIN: Analisis Putusan Mahkamah Konstitusi No. 46/PUU-VIII/2010 Tentang Uji Materi Terhadap Pasal 43 Ayat 1 UU No. 1 Tahun 1974 Tentang Perkawinan. *Ahkam: Jurnal Hukum Islam*, 5(1), 117–137. https://doi.org/10.21274/ahkam.2017.5.1. 117-137

Astani, L. G. M. Z., Nasri, U., Fahrurrozi, & Thohri, M. (2024). Siti Raihanun Zainuddin Abdul Madjid, Female Scholar of The 21st Century: Pioneer in Gender Transformation and Islamic Education In Lombok-West Nusa Tenggara. *Edukasia Islamika: Jurnal Pendidikan Islam*, 9(1), 1–19. https://doi.org/10.28918/jei.v8i2

Azmi, A. (2021). Kawin Hamil Dan Implikasinya Terhadap Hak Keperdataan Anak Zina Menurut Khi, Hukum Positif Dan Hukum Islam. *Jurnal Analisa Pemikiran Insaan Cendikia*, 4(1), 37–51. https://doi.org/10.54583/apic.vol4.no1.52

Baghdadi, F., Rauktis, M. E., Hands, C., John, A., Khanom, A., El Mhamdi, S., Soussi, A., & Snooks, H. (2024). Using a systems perspective to examine child protection systems and practice: A scoping review on child abandonment and institutionalisation in the Maghreb. *Children and Youth Services Review*, 157, 107382.

https://doi.org/10.1016/j.childyouth.2023. 107382

Barrédy, C. (2016). In search of future alternatives for family business: Family law contributions through Civil and Common Law comparison. *Futures*, *75*, 44–53.

https://doi.org/10.1016/j.futures.2015.09.0

Bockhold, S., McNulty, J., Abdurakman, E., Bezzina, P., Drey, N., England, A., Flinton, D., Khine, R., McEntee, M., Mekiš, N., Precht, H., Rainford, L., Sá Dos Reis, C., Santos, A., Syrgiamiotis,

- V., Willis, S., Woodley, J., Beardmore, C., Harris, R., ... Malamateniou, C. (2022). Research ethics training, challenges, and suggested improvements across Europe: Radiography research ethics standards for Europe (RRESFE). *Radiography*, 28(4), 1016–1024. https://doi.org/10.1016/j.radi.2022.07.004
- Downs, D. A. (2015). Civil Liberties and Human Rights. In *International Encyclopedia of the Social & Behavioral Sciences* (pp. 674–679). Elsevier. https://doi.org/10.1016/B978-0-08-097086-8.86008-0
- Faraby, A. H. A., & Parepare, I. (2023). Hak Waris Anak Zina: Studi Komprataif Hukum Islam Dan Hukum Positif. *Meraja Journal*, *6*(3), 115–137.
- Febri, S. (2023). Kewarisan Anak Zina Menurut Mazhab Hanafi Dan Mazhab Syafi'i [Thesis (Masters)]. UIN RADEN INTAN.
- H. Munir, Z. A., Nasri, U., & Muliadi, E. (2021). Harta Tak Bertuan: Teori Pemindahan Hak Waris dari Orang yang Meninggal Menurut Hukum Islam. CV. Haramain Lombok.
- Iyakaremye, I., Mukamana, L., & Umutoni, J. (2020). Paternity denial and consequences on children in patriarchal society: Situation in consensual couples in Rwanda. *Children and Youth Services Review*, 118, 105357. https://doi.org/10.1016/j.childyouth.2020. 105357
- Khatab, S., Hassan Fadi Hijab, M., Othman, A., & Al-Thani, D. (2024). Collaborative play for autistic children: A systematic literature review. *Entertainment Computing*, 50, 100653. https://doi.org/10.1016/j.entcom.2024.100 653
- Masyhuri, & Nasri, U. (2017). *Politik Hukum Pemerintahan Daerah di Indonesia*. Semesta Ilmu.
- Mihas, P. (2023). Qualitative research methods: Approaches to qualitative data analysis. In *International Encyclopedia of Education(Fourth Edition)* (pp. 302–313). Elsevier. https://doi.org/10.1016/B978-0-12-818630-5.11029-2
- Mu, C. (2024). Citation choices in L2 novices' and experts' literature review sections: A functional discourse analysis. *Journal of English for Academic Purposes*, 68,

- 101361. https://doi.org/10.1016/j.jeap.2024.10136
- Nasri, U. (2015). Menyapa Umat Islam di Zaman Modern Melalui Mimbar Khotbah Jumat. Deepublish.
- Nasri, U. (2017). Bersahabat Dengan Ilmu: Sebuah Pengantar Filsafat Ilmu. CV. Haramain Lombok.
- Nasri, U. (2019a). *Ngaji Bareng Filosof: Sebuah Pengantar Filsafat Umum*. CV. Haramain Lombok.
- Nasri, U. (2019b). *Philosophy is Mother of Science: Pengantar Filsafat.* CV. Haramain Lombok.
- Nasri, U. (2023a). Exploring Qualitative Research: A Comprehensive Guide to Case Study Methodology. *Al-Hikmah: Jurnal Studi Islam*, 4(3), 72–85.
- Nasri, U. (2023b). *Philosophy of Education*. CV. Haramain Lombok.
- Nasri, U. (2023c). Sitti Raihanun Zainuddin Abdul Madjid: Inspiration from the East in Pioneering the Largest Islamic Educational Institution in West Nusa Tenggara. *Journal of Advances in Education and Philosophy*, 7(12), 584– 589.
  - https://doi.org/10.36348/jaep.2023.v07i12 .005
- Nasri, U., & Astani, L. G. M. Z. (2024). Sitti Raihanun: Female cleric and initiator of prominent Islamic educational institutions in Lombok, West Nusa Tenggara. *Journal of Research in Instructional*, 4(1), 141–154. https://doi.org/10.30862/jri.v4i1.322
- Nasri, U., Atsani, L. G. M. Z., Fahrurrozi, & Thohri, M. (2023). 21st century gender transformation: Contributions of siti raihanun zainuddin abdul madjid as a female figure in islamic education in lombok. *Sypriot Journal of Education Sciences*, 18(4), 754–766. https://doi.org/10.18844/cjes.v18i4
- Nasri, U., Fauziana, M., Umar, U., Bekti, A. B., Zarkasi, Z., Kahar, K., Sudirman, S., Musni, L., & Wahid, eko. (2016). Pengembangan Kurikulum Pendidikan Agama Islam Transformatif. 1.
- Nasri, U., Nuha, U., & Nabila, Y. (2024). Literature Review And Practical Guide: Bibliographic Research Method In The Formation Of Conceptual Framework.

- BIMSALABIM: Jurnal Ilmiah Ilmu Pendidikan Dan Pembelajaran, 1(1), 10– 16.
- Nasution, A. S., Sutrisna, S., & Gustiawati, S. (2021). Kewenangan Ayah Biologis Menjadi Wali Nikah Bagi Anak Hasil Zina Menurut Pandangan Imam Syafi'i dan Putusan Mahkamah Konstitusi (MK) NO. 16/PUU-VIII/2010. As-Syar'i: Jurnal Bimbingan & Konseling Keluarga, 4(2), 125–137. https://doi.org/10.47467/as.v4i2.819
- Nsabimana, E., Rutembesa, E., Gishoma, D., Uwineza, J., Fasseur, F., Herczog, M., & Martin-Soelch, C. (2021).residential system orphanizes care children? Perceived pathways to selfadjustment following institutionalization in Rwanda. Children and Youth Services Review. 122. 105870. https://doi.org/10.1016/j.childyouth.2020. 105870
- Rulyandi, Hafiz, H. S., Haris, A., & Nasri, U. (2024). Indonesian Language Education as an Agent of Social Change: Sociological and Religious Approaches. Scholars International Journal of Linguistics and Literature, 7(3), 67–72. https://doi.org/10.36348/sijll.2024.v07i03. 001
- Rulyandi, R., & Nasri, U. (2023). Building Motivation for Learning Indonesian Language: Psychological and Social Strategies. *Jurnal Ilmiah Profesi Pendidikan*, 8(3), 1998–2003. https://doi.org/10.29303/jipp.v8i3.2107
- Schwandt, T. A. (2021). Qualitative data analysis: A sourcebook of new methods. *Evaluation and Program Planning*, 9(2), 184–187. https://doi.org/10.1016/0149-7189(86)90041-8
- Steffen, V., De Oliveira, M. S., Brusamarello, C. Z., & Trojan, F. (2024). A new Normalized Index for Ranking Papers in Systematic Literature Reviews. *Decision Analytics Journal*, 10, 100439. https://doi.org/10.1016/j.dajour.2024.100 439
- Suparman, S., Nasri, U., & Zulkifli, Muh. (2023). Recontextualization of Islamic Educational Thought within Fazlur Rahman's Intellectual Framework. *Jurnal Ilmiah Profesi Pendidikan*, 8(4), 1945—

- 1950.
- https://doi.org/10.29303/jipp.v8i4.1639
- Syafi'i, A., Muharrom, M., & Handayani, D. (2021). Kewajiban Anak Luar Nikah dalam Menafkahi Kedua Orangtua di Masa Tuanya Komparasi Mazhab Syafi'i dan Hukum Positif. *Al Mashalih: Journal of Islamic Law*, 2(1), 53.
- Wallwey, C., & Kajfez, R. L. (2023). Quantitative research artifacts as qualitative data collection techniques in a mixed methods research study. *Methods in Psychology*, 8, 100115. https://doi.org/10.1016/j.metip.2023.1001
- Wulandari, R. (2028). Status Nasab Anak Di Luar Nikah Perspektif Mazhab Hanafi Dan Mazhab Syafi'i Dan Implikasinya Terhadap Hak — Hak Anak [Thesis (Masters), UIN Raden Intan Lampung]. http://repository.radenintan.ac.id/id/eprint /4212
- Yan, Z., & Li, Y. (2023). Data collection optimization of ocean observation network based on AUV path planning and communication. *Ocean Engineering*, 282, 114912.
  - https://doi.org/10.1016/j.oceaneng.2023.1 14912