Dipl.-Ing. (FH) Jan Kühn, M.Sc.

Kontakt

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Fax +49 241 80 22150

Adresse: Ahornstr. 55, 52074 Aachen, Germany
Büro: Raum 2313 (Gebäude H)

Forschung

ECLA-VENT
AutoMock

Lehre

WS2017/18:

- Dynamic Systems for Computer Scientists (V)
- Cyber-Physische Systeme in Medizintechnik und Mobilität (S)

WS2016/17:

- Dynamic Systems for Computer Scientists (V)
- Eingebettete Software in Medizintechnik & eMobilität (S)

SS2016:

- Eingebettete Software in Medizintechnik & eMobilität (S)

WS2015/16:

- Dynamic Systems for Computer Scientists (V)
- Eingebettete Signalverarbeitung in Medizintechnik & eMobilität (S)

WS2014/15:

- Dynamic Systems for Computer Scientists (V)
- Ausgesuchte Themen zur Eingebetteten Software (S)

WS2013/14:

- Safe and Sound: Testing and Model Checking of Embedded Systems (S)
- Dynamic Systems for Computer Scientists (V)

Betreute Abschlussarbeiten

- Eingebette Rezirkulationsmessung für ECLA-Systeme
- Editor und Steuerungsapplikation für pulsatile Blutflüsse
- Rezirkulationsmessung bei extrakorporaler Lungenunterstützung
- Auslegung einer pulsatilen Ansteuerungsstrategie für eine Blutpumpe
- Modellierung und Analyse von konkurrierenden Sicherheitszielen in einer intensivmedizinischen Anwendung

Publikationen

[KBS+19]
PDFBIB

Kühn, J., Buglowski, M., Stollenwerk, A., Kowalewski, S., Walter, M., Leonhardt, S., Petran, J., Kopp, R., Rossaint, R., and Janisch, T., "Fault Identification in a Blood Pump Using Neural Networks", in *Proc. World Congress on Medical Physics and Biomedical Engineering 2018 : June 3-8, 2018, Prague, Czech Republic (Vol.2) / edited by Lenka Lhotska, Lucie Sukupova, Igor Lacković, Geoffrey S. Ibbott*, Singapore, 2019 in IFMBE Proceedings, Springer Singapore, pp. 27-32.

Fault Identification in a Blood Pump Using Neural Networks

Bibtex entry :

```
@inproceedings {  KBS+19,
    author = { K{\"u}hn, Jan and Buglowski, Mateusz and Stollenwerk,
André
        and Kowalewski, Stefan and Walter, Marian and Leonhardt,
        Steffen and Petran, Jan and Kopp, R{\"u}dger and Rossaint,
        Rolf and Janisch, Thorsten },
    title = { Fault Identification in a Blood Pump Using Neural
Networks },
    booktitle = { World Congress on Medical Physics and Biomedical
Engineering
        2018 : June 3-8, 2018, Prague, Czech Republic (Vol.2) /
        edited by Lenka Lhotska, Lucie Sukupova, Igor Lacković,
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    publisher = { Springer Singapore },
    pages = { 27-32 },
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    series = { IFMBE Proceedings },
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    cin = { 533000-2 / 122810 / 120000 / 611010 },
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[KSK+18]
PDFBIB

Kühn, J., Stollenwerk, A., Kowalewski, S., Fabry, G., Grzanna, T., Doorschodt, B., Tolba, R. H., Rossaint, R., and Bleilevens, C., "A long-term setup for kidney perfusion"." 2018.

A long-term setup for kidney perfusion

Bibtex entry :

```
@inproceedings {  KSK+18,
    author = { K{\"u}hn, Jan and Stollenwerk, André and Kowalewski,
Stefan
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        and Tolba, René H. and Rossaint, Rolf and Bleilevens,
        Christian },
    title = { A long-term setup for kidney perfusion },
    year = { 2018 },
    organization = { 52nd Annual Conference of the German Society for
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        Engineering, Aachen (Germany), 2018-09-26 - 2018-09-28 },
    typ = { PUB:(DE-HGF)6 },
    reportid = { RWTH-CONV-236288 },
    cin = { 122810 / 120000527000-2 / 9210105 },
    url = { http://publications.rwth-aachen.de/record/752261 },
}
```

[SBK18]
PDFBIB

Stollenwerk, A., Buglowski, M., and Kühn, J., "Mock loop for bubble generation in a centrifugal blood pump for fault simulation", *Current Directions in Biomedical Engineering*, vol. 4, iss. 1, pp. 33-36, 2018

Mock loop for bubble generation in a centrifugal blood pump for fault simulation

Bibtex entry :

```
@article {  SBK18,
    author = { Stollenwerk, André and Buglowski, Mateusz and K{\"u}hn,
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    volume = { 4 },
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http://publications.rwth-aachen.de/record/752262/files/752262.pdf },
}
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[WKJ+18]
PDFBIB

Walter, M., Kühn, J., Janisch, T., Petran, J., Kopp, R., and Leonhardt, S., "Cooperative automation of extracorporeal gas exchange and artificial ventilation", in *Proc. World Congress on Medical Physics & Biomedical Engineering : June 3-8, 2018, Prague, Czech Republic : IUPESM Pague 2018 : Book of Abstracts*, 2018, pp. 663-664.

Cooperative automation of extracorporeal gas exchange and artificial ventilation

Bibtex entry :

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@inproceedings {  WKJ+18,
    author = { Walter, Marian and K{\"u}hn, J. and Janisch, Thorsten
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    url = { https://guarant.topinfo.cz/iupesm2018/en/book-of-abstracts
},
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[BMK+17]
PDFBIB

Brendle, C., Mülders, T., Kühn, J., Janisch, T., Kopp, R., Rossaint, R., Stollenwerk, A., Kowalewski, S., Misgeld, B. J. E., Leonhardt, S., and Walter, M., "Physiological closed-loop control of mechanical ventilation and extracorporeal membrane oxygenation", *Biomedizinische Technik*, vol. 62, iss. 2, pp. 199-212, 2017

Physiological closed-loop control of mechanical ventilation and extracorporeal membrane oxygenation

Bibtex entry :

```
@article {  BMK+17,
    author = { Brendle, Christian and M{\"u}lders, Thorsten and
K{\"u}hn,
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        Rolf and Stollenwerk, André and Kowalewski, Stefan and
        Misgeld, Berno Johannes Engelbert and Leonhardt, Steffen and
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    publisher = { de Gruyter },
    pages = { 199-212 },
    volume = { 62 },
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    reportid = { RWTH-2017-09475 },
    cin = { 611010 / 122810533000-2 },
    url = { http://publications.rwth-aachen.de/record/707843 },
}
```

[DKK17]
PDFBIB

Dernehl, C., Kühn, J., and Kowalewski, S., "Case studies on automated verification with slope boundaries for block diagrams", *Computer Languages, Systems & Structures*, vol. 54, pp. 528-543, 2017

Case studies on automated verification with slope boundaries for block diagrams

Bibtex entry :

```
@article {  DKK17,
    author = { Dernehl, Christian and K{\"u}hn, Jan and Kowalewski,
Stefan },
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    pages = { 528-543 },
    volume = { 54 },
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    cin = { 122810 / 120000 },
    url = { http://publications.rwth-aachen.de/record/752271 },
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[KBS+17]
PDFBIB

Kühn, J., Brendle, C., Stollenwerk, A., Schweigler, M., Kowalewski, S., Janisch, T., Rossaint, R., Leonhardt, S., Walter, M., and Kopp, R., "Decentralized safety concept for closed-loop controlled intensive care : Supervision of a blood pump during extracorporeal circulation", *Biomedizinische Technik*, vol. 62, iss. 2, pp. 213-224, 2017

Decentralized safety concept for closed-loop controlled intensive care : Supervision of a blood pump during extracorporeal circulation

Bibtex entry :

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@article {  KBS+17,
    author = { K{\"u}hn, Jan and Brendle, Christian and Stollenwerk,
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    journal = { Biomedizinische Technik },
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}
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[WKK+17]
PDFBIB

Walter, M., Kunczik, J., Kühn, J., Janisch, T., Kopp, R., and Leonhardt, S., "Robust control of extracorporeal gas exchange", in *Proc. Abstract Book at EMBEC'17 & NBC'17 : the Joint conference of the European Medical and Biological Engineering Conference (EMBEC) and the Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (NBC) : Tampere, Finland / Editors: Jennika Karvinen, Janne Koivisto, Sampo Tuukkanen, Jari Viik*, Finland, 2017, BioMediTech Institute and Faculty of Biomedical Sciences and Engineering Tampere University of Technology, p. 365, 150-150.

Robust control of extracorporeal gas exchange

Bibtex entry :

```
@inproceedings {  WKK+17,
    author = { Walter, Marian and Kunczik, Janosch and K{\"u}hn, Jan
and
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        Steffen },
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        the European Medical and Biological Engineering Conference
        (EMBEC) and the Nordic-Baltic Conference on Biomedical
        Engineering and Medical Physics (NBC) : Tampere, Finland /
        Editors: Jennika Karvinen, Janne Koivisto, Sampo Tuukkanen,
        Jari Viik },
    publisher = { BioMediTech Institute and Faculty of Biomedical
Sciences and
        Engineering Tampere University of Technology },
    pages = { 365, 150-150 },
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[BHK+16]
PDFBIB

Brendle, C., Hackmack, K. -F., Kühn, J., Wardeh, M. N., Janisch, T., Kopp, R., Rossaint, R., Stollenwerk, A., Kowalewski, S., Leonhardt, S., Walter, M., and Misgeld, B. J. E., "Closed-loop control of extracorporeal oxygen and carbon dioxide gas transfer", *Control engineering practice*, p. 10, 2016

Closed-loop control of extracorporeal oxygen and carbon dioxide gas transfer

Bibtex entry :

```
@article {  BHK+16,
    author = { Brendle, Christian and Hackmack, K.-F. and K{\"u}hn, Jan
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        Wardeh, M. N. and Janisch, T. and Kopp, R{\"u}dger and
        Rossaint, Rolf and Stollenwerk, André and Kowalewski,
        Stefan and Leonhardt, Steffen and Walter, Marian and
        Misgeld, Berno Johannes Engelbert },
    title = { Closed-loop control of extracorporeal oxygen and carbon
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    journal = { Control engineering practice },
    publisher = { Elsevier Science },
    pages = { 10 Seiten },
    year = { 2016 },
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    issn = { 0967-0661 },
    doi = { 10.1016/j.conengprac.2016.09.016 },
    typ = { PUB:(DE-HGF)16 },
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    url = { http://publications.rwth-aachen.de/record/678130 },
}
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[BHK+16a]
PDFBIB

Brendle, C., Hackmack, K. -F., Kühn, J., Wardeh, M. N., Janisch, T., Kopp, R., Rossaint, R., Stollenwerk, A., Kowalewski, S., Misgeld, B. J. E., Leonhardt, S., and Walter, M., "Continuous gas transfer monitoring during extracorporeal membrane oxygenation", *Biomedical signal processing and control*, vol. 31, pp. 321-330, 2016

Continuous gas transfer monitoring during extracorporeal membrane oxygenation

Bibtex entry :

```
@article {  BHK+16a,
    author = { Brendle, Christian and Hackmack, K.-F. and K{\"u}hn, Jan
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    typ = { PUB:(DE-HGF)16 },
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    url = { http://publications.rwth-aachen.de/record/678132 },
}
```

[DKK16]
PDFBIB

Dernehl, C., Kühn, J., and Kowalewski, S., "Abstract Interpretation for Block Diagrams - Two Case Studies", in *Proc. MoDeVVa 2016 : Model-Driven Engineering, Verification and Validation : proceedings of the 13th Workshop on Model-Driven Engineering, Verification and Validation co-located with ACM/IEEE 19th International Conference on Model Driven Engineering Languages and Systems (MODELS 2016) : Saint-Malo, France, October 3, 2016 / edited by Michalis Famelis, Daniel Ratiu, Gehan M. K. Selim*, [Erscheinungsort nicht ermittelbar], 2016 in CEUR workshop proceedings, [Verlag nicht ermittelbar], pp. 20-29.

Abstract Interpretation for Block Diagrams - Two Case Studies

Bibtex entry :

```
@inproceedings {  DKK16,
    author = { Dernehl, Christian and K{\"u}hn, Jan and Kowalewski,
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and
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        co-located with ACM/IEEE 19th International Conference on
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        : Saint-Malo, France, October 3, 2016 / edited by Michalis
        Famelis, Daniel Ratiu, Gehan M. K. Selim },
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    pages = { 20-29 },
    series = { CEUR workshop proceedings },
    year = { 2016 },
    address = { [Erscheinungsort nicht ermittelbar] },
    organization = { 13th Workshop on Model Design, Verification and
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    cin = { 122810 / 120000 },
    url = { http://ceur-ws.org/Vol-1713/MoDeVVa_2016_paper_3.pdf },
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[KSB+16]
PDFBIB

Kühn, J., Stollenwerk, A., Brendle, C., Janisch, T., Walter, M., Rossaint, R., Leonhardt, S., Kowalewski, S., and Kopp, R., "Sensor Supervision and Control Value Limitations in Networked Intensive Care"Aachen: RWTH, 2016, vol. 1559, pp. 187-194.

Sensor Supervision and Control Value Limitations in Networked Intensive Care

Bibtex entry :

```
@inbook {  KSB+16,
    author = { K{\"u}hn, Jan and Stollenwerk, André and Brendle,
Christian
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        and Leonhardt, Steffen and Kowalewski, Stefan and Kopp,
        R{\"u}dger },
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    booktitle = { [Gemeinsamer Tagungsband der Workshops der Tagung
Software
        Engineering 2016 (SE-WS 2016), Wien, 23.-26. Februar 2016 /
        Edited by: Wolf Zimmermann, Lukas Alperowitz, Bernd
        Br{\"u}gge, J{\"o}rn Fahsel, Andrea Herrmann, Anne Hoffmann,
        Andreas Krall, Dieter Landes, Horst Lichter, Dirk Riehle,
        Ina Schaefer, Constantin Scheuermann, Alexander Schlaefer,
        Sibylle Schupp, Andreas Seitz, Andreas Steffens, André
        Stollenwerk, R{\"u}diger Wei{\ss}bach] },
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    pages = { 187-194 },
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[KVS+16]
PDFBIB

Kühn, J., Vaitl, L., Stollenwerk, A., Brendle, C., Walter, M., Leonhardt, S., Kowalewski, S., Rossaint, R., Kopp, R., and Janisch, T., "Eingebettete Rezirkulationsmessung für eine ECLA-Therapie", in *Proc. AUTOMED 2016 : Workshop : Wismar, 22.-23. September 2016 / DGBMT - Deutsche Gesellschaft für Biomedizinische Technik im VDE ; Editoren: Prof. Dr.-Ing. habil. Olaf Simanski, Dr. Olaf Hagendorf, Jörg Zucknik*, Wismar, 2016, Hochschule Wismar, Fakultät für Ingenieurwissenschaften, Fachgebiet Automaisierungstechnik/Mechatronik, p. 2.

Eingebettete Rezirkulationsmessung für eine ECLA-Therapie

Bibtex entry :

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@inproceedings {  KVS+16,
    author = { K{\"u}hn, Jan and Vaitl, Lorenz and Stollenwerk, André
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        DGBMT - Deutsche Gesellschaft f{\"u}r Biomedizinische
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        Simanski, Dr. Olaf Hagendorf, J{\"o}rg Zucknik },
    publisher = { Hochschule Wismar, Fakult{\"a}t f{\"u}r
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    pages = { 2 Seiten },
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    organization = { Automatisierungsverfahren f{\"u}r die Medizin
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http://automed2016.hs-wismar.de/wp-content/uploads/2017/02/Kuehn_Inform
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}
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[WBK+16]
PDFBIB

Walter, M., Brendle, C., Kühn, J., Janisch, T., Kopp, R., Stollenwerk, A., and Leonhardt, S., "Assistive Control of Extracorporeal Oxygenation Systems", in *Proc. [Proceedings of the 12th Russian-German Conference on Biomedical Engineering]*, 2016, pp. 222-226.

Assistive Control of Extracorporeal Oxygenation Systems

Bibtex entry :

```
@inproceedings {  WBK+16,
    author = { Walter, Marian and Brendle, Christian and K{\"u}hn, Jan
and
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    booktitle = { [Proceedings of the 12th Russian-German Conference on
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[BHK+15]
PDFBIB

Brendle, C., Hackmack, K., Kühn, J., Wardeh, M. N., Kopp, R., Rossaint, R., Stollenwerk, A., Kowalewski, S., Misgeld, B., Leonhardt, S., and Walter, M., "In silico evaluation of gas transfer estimation during extracorporeal membrane oxygenation", *IFAC-PapersOnLine*, vol. 48, iss. 20, 2015

In silico evaluation of gas transfer estimation during extracorporeal membrane oxygenation

Bibtex entry :

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@article {  BHK+15,
    author = { Brendle, Christian and Hackmack, Kay-Florian and
K{\"u}hn,
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    address = { Laxenburg },
    issn = { 2405-8963 },
    organization = { 9th IFAC Symposium on Biological and Medical
Systems, Berlin
        (Germany), 2015-08-31 - 2015-09-02 },
    doi = { 10.1016/j.ifacol.2015.10.190 },
    typ = { PUB:(DE-HGF)16 },
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    cin = { 122810 / 120000 / 611010533000-2 },
    url = {
http://www.sciencedirect.com/science/article/pii/S2405896315020819 },
}
```

[KSB+15]
PDFBIB

Kühn, J., Stollenwerk, A., Brendle, C., Walter, M., Wardeh, M. N., Kopp, R., and Kowalewski, S., "Embedded Safety Measures for Extracorporeal Blood Circulation", in *Proc. [Proceedings of the 11th German-Russian-Conference on Biomedical Engineering, GRC, 17.06.2015-19.06.2015, Aachen, Germany]*, 2015, pp. 169-170.

Embedded Safety Measures for Extracorporeal Blood Circulation

Bibtex entry :

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@inproceedings {  KSB+15,
    author = { K{\"u}hn, Jan and Stollenwerk, André and Brendle,
Christian
        and Walter, Marian and Wardeh, Markus Nabil and Kopp,
        R{\"u}dger and Kowalewski, Stefan },
    title = { Embedded Safety Measures for Extracorporeal Blood
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    booktitle = { [Proceedings of the 11th German-Russian-Conference on
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        Germany] },
    pages = { 169-170 },
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[KSK+15]
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    author = { K{\"u}hn, Jan and Stollenwerk, André and Kowalewski,
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    author = { K{\"u}hn, Jan and Schoonbrood, Pierre and Stollenwerk,
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PDFBIB

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    author = { K{\"u}hn, Jan and W{\"u}bbels, Nico and Stollenwerk,
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    author = { Stollenwerk, André and K{\"u}hn, Jan and Brendle,
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