



1 of 1

Export Download Print E-mail Save to PDF Add to List More... >

2020 IEEE Information Theory Workshop, ITW 2020 • 11 April 2021 • Article number 9457573 • 2020 IEEE Information Theory Workshop, ITW 2020 • Virtual, Riva del Garda • 11 April 2021 through 15 April 2021 • Code 170943

Document type  
Conference Paper

Source type  
Conference Proceedings

ISBN  
978-172815962-1

DOI  
10.1109/ITW46852.2021.9457573

View more ▾

# Achievable error exponents for the two-way parallel DMC

Palacio-Baus K.<sup>a,b</sup> ✉ , Devroye N.<sup>a</sup> ✉

Save all to author list

<sup>a</sup> University of Illinois at Chicago, United States

<sup>b</sup> University of Cuenca, Ecuador

Full text options ▾

Abstract

Indexed keywords

SciVal Topics

Funding details

## Abstract

We investigate error exponent regions for the parallel two-way DMC in which each terminal sends its own message and provides feedback to the other terminal. Various error exponents are presented in different rate-region regimes based on the relative rates and zero-error capacities of both directions. The schemes employed are extensions of error exponents for one-way DMCs with noiseless, rate-limited and noisy feedback<sup>1</sup> ©2021 IEEE

Indexed keywords

## Engineering controlled terms

Information theory

## Engineering uncontrolled terms

Error exponent; Error exponent regions; Noisy feedback; Rate regions; Relative rates; Two ways; Zero-error capacity

Cited by 0 documents

Inform me when this document is cited in Scopus:

Set citation alert >

## Related documents

Error Exponents of Parallel Two-way Discrete Memoryless Channels using Variable Length Coding

Palacio-Baus, K. , Asadi, M. , Devroye, N. (2019) IEEE International Symposium on Information Theory - Proceedings

Achievable Error Exponents for Two-Way AWGN Channels

Palacio-Baus, K. , Devroye, N. (2021) IEEE International Symposium on Information Theory - Proceedings

Variable-length Coding Error Exponents for the AWGN Channel with Noisy Feedback at Zero-Rate

Palacio-Baus, K. , Devroye, N. (2019) IEEE International Symposium on Information Theory - Proceedings

View all related documents based on references

Find more related documents in Scopus based on:

Authors > Keywords >

---

[SciVal Topics](#) ⓘ

---

[Funding details](#)

---

**References (14)**[View in search results format >](#) All[Export](#)  [Print](#)  [E-mail](#)  [Save to PDF](#) [Create bibliography](#)

- 
- 1 Shannon, C.E.  
Two-way communications channels  
(1961) *4th Berkeley Symp. Math. Stat. Prob.*, pp. 611-644. Cited 679 times.  
Chicago, IL, Jun

- 
- 2 Draper, S.C., Sahai, A.  
**Variable-length channel coding with noisy feedback**  
([Open Access](#))  
  
(2008) *European Transactions on Telecommunications*, 19 (4), pp. 355-370. Cited 23 times.  
doi: 10.1002/ett.1288  
  
[View at Publisher](#)

- 
- 3 Palacio-Baus, K., Asadi, M., Devroye, N.  
**Error Exponents of Parallel Two-way Discrete Memoryless Channels using Variable Length Coding**  
  
(2019) *IEEE International Symposium on Information Theory - Proceedings*, 2019-July, art. no. 8849727, pp. 2249-2253. Cited 2 times.  
ISBN: 978-153869291-2  
doi: 10.1109/ISIT.2019.8849727  
  
[View at Publisher](#)

- 
- 4 Burnashev, M.V.  
**DATA TRANSMISSION OVER A DISCRETE CHANNEL WITH FEEDBACK. RANDOM TRANSMISSION TIME.**  
  
(1976) *Probl Inf Transm*, 12 (4), pp. 250-265. Cited 150 times.

- 
- 5 Yamamoto, H., Itoh, K.  
**Asymptotic Performance of a Modified Schalkwijk-Barron Scheme for Channels with Noiseless Feedback**  
  
(1979) *IEEE Transactions on Information Theory*, 25 (6), pp. 729-733. Cited 97 times.  
doi: 10.1109/TIT.1979.1056119  
  
[View at Publisher](#)
-

- 6 Forney, G.D.  
Exponential Error Bounds for Erasure, List, and Decision Feedback Schemes  
  
(1968) *IEEE Transactions on Information Theory*, IT-14 (2), pp. 206-220. Cited 226 times.  
doi: 10.1109/TIT.1968.1054129  
  
View at Publisher
- 
- 7 Gallager, R.G.  
(1968) *Information Theory and Reliable Communication*. Cited 5173 times.  
New York, NY: Wiley
- 
- 8 Draper, S.C., Ramchandran, K., Rimoldi, B., Sahai, A., Tse, D.N.C.  
Attaining maximal reliability with minimal feedback via joint channel-code and hash-function design  
  
(2005) *43rd Annual Allerton Conference on Communication, Control and Computing 2005*, 3, pp. 1156-1166. Cited 16 times.  
ISBN: 978-160423491-6
- 
- 9 Sato, A., Yamamoto, H.  
Error exponents of discrete memoryless channels and AWGN channels with noisy feedback  
  
(2010) *ISITA/ISSSTA 2010 - 2010 International Symposium on Information Theory and Its Applications*, art. no. 5649359, pp. 452-457. Cited 8 times.  
ISBN: 978-142446017-5  
doi: 10.1109/ISITA.2010.5649359  
  
View at Publisher
- 
- 10 Palacio-Baus, K., Devroye, N.  
*Achievable Error Exponents for the Two-Way Parallel DMC*  
Extended version  
<https://devroye.lab.uic.edu/research2/publications/,2020>
- 
- 11 Shannon, C.E.  
A Mathematical Theory of Communication  
  
(1948) *Bell System Technical Journal*, 27 (4), pp. 623-656. Cited 19843 times.  
doi: 10.1002/j.1538-7305.1948.tb00917.x  
  
View at Publisher
- 
- 12 Shannon, C.E.  
The zero error capacity of a noisy channel  
  
(1956) *IRE Transactions on Information Theory*, 2 (3), pp. 8-19. Cited 857 times.  
doi: 10.1109/TIT.1956.1056798  
  
View at Publisher
-

- 
- 13 Shannon, C.E., Gallager, R.G., Berlekamp, E.R.  
Lower bounds to error probability for coding on discrete memoryless channels. I ([Open Access](#))

(1967) *Information and Control*, 10 (1), pp. 65-103. Cited 273 times.  
doi: 10.1016/S0019-9958(67)90052-6

[View at Publisher](#)

---

- 14 Lovász, L.  
On the Shannon Capacity of a Graph

(1979) *IEEE Transactions on Information Theory*, 25 (1), pp. 1-7. Cited 901 times.

doi: 10.1109/TIT.1979.1055985

[View at Publisher](#)

---

© Copyright 2021 Elsevier B.V., All rights reserved.

---

## About Scopus

[What is Scopus](#)

[Content coverage](#)

[Scopus blog](#)

[Scopus API](#)

[Privacy matters](#)

## Language

[日本語に切り替える](#)

[切换到简体中文](#)

[切换到繁體中文](#)

[Русский язык](#)

## Customer Service

[Help](#)

[Tutorials](#)

[Contact us](#)

---

## ELSEVIER

[Terms and conditions](#) ↗ [Privacy policy](#) ↗

Copyright © Elsevier B.V. ↗. All rights reserved. Scopus® is a registered trademark of Elsevier B.V.

We use cookies to help provide and enhance our service and tailor content. By continuing, you agree to the use of cookies.

