

# Marco Chiesa | Curriculum Vitae

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I am an Assistant Professor at the KTH Royal Institute of Technology. My research interests lie in computer networking and, more specifically, in aspects of Internet protocols and architectures ranging from **security and privacy** to **network design and optimization**. I was a leading contributor to the ENDEAVOUR (H2020 EU funded) project, intended to bring Software-Defined Networking (SDN) functionality to inter-domain routing on the Internet.

## Academics

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- **KTH Royal Institute of Technology** **Stockholm, Sweden**  
*Assistant Professor* *January 2018–now*  
Networked Systems Lab  

My responsibilities include conducting high-level international research, guaranteeing a source of funding from national and international bodies, and teaching/supervising students in their educational programs.
- **Université catholique de Louvain** **Louvain-la-neuve, Belgium**  
*Postdoctoral researcher, “Endeavour” H2020 EU funded project* *August 2015–December 2017*  
Advisor: Prof. Marco Canini  

Designed, built, and evaluated SIXPACK [w33] [c3], a privacy-preserving interdomain route-dispatch system for Internet eXchange Points (IXPs) that leverages Secure Multi-Party Computation (SMPC). Contributed to the Endeavour IXP platform [j20], a new SDN-based architecture for IXPs. Collaborated on ez-Segway [w32] [c4], a distributed network update mechanism.
- **Hebrew University of Jerusalem** **Jerusalem, Israel**  
*Postdoctoral researcher, I-CORE “Fibonacci” fellowship* *March 2014–August 2015*  
Advisor: Prof. Michael Schapira  

Designed, built, and evaluated COYOTE [c6][j16], a readily deployable SDN-like traffic-engineering scheme for robust and efficient network utilization.
- **ICSI/UC Berkeley** **Berkeley, CA, US**  
*Visiting Ph.D. student* *Aug 2013–Dec 2013*  
Host: Prof. Scott Shenker  

Designed, built, and evaluated novel fast-reroute algorithms in a variety of models [c7] [c8] [j18]: deterministic routing, routing with packet-duplication, routing with packet-header-rewriting, and randomized routing.
- **Hebrew University of Jerusalem** **Jerusalem, Israel**  
*Visiting Ph.D. student* *Oct 2012–Apr 2013*  
Host: Prof. Michael Schapira  

Embarked upon a systematic algorithmic study of traffic engineering with OSPF/ECMP in arbitrary and datacenter [c9][j19].
- **Roma Tre University** **Rome, Italy**  
*Ph.D. in computer science* *2011–2013*  
Advisor: Prof. Giuseppe Di Battista  
Degree Thesis: The Role of Routing Policies in the Internet: Stability, Security, and Load-Balancing

Formally analyzed Internet routing properties related to security and stability Internet aspects [c10][c12][c13].

### Roma Tre University

Rome, Italy

○ *B.sc and M.sc. in computer science*

2005–2010

M.sc. advisor: Prof. Giuseppe Di Battista

M.sc. degree thesis: Inter-domain routing: relating the expressive power of router configuration languages to the complexity of stability-related decision problems

Rating: 110/110 with honors

## Publications

### International conference publications.....

- [c1] P. Marcos, **M. Chiesa**, L. Muller, P. Kathiravelu, C. Dietzel, M. Canini, M. Barcellos. Dynam-IX: a Dynamic Interconnection eXchange. Submitted to *ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT)*. 2018. Acceptance rate: 17%.
- [c2] P. Kathiravelu, **M. Chiesa**, P. de B. Marcos, M. Canini, L. Veiga. Moving Bits with a Fleet of Shared Virtual Routers. In *IEEE/IFIP Networking (Networking)*. 2018.
- [c3] **M. Chiesa**, D. Demmler, M. Canini, M. Schapira, T. Schneider. SIXPACK: Securing Internet eXchange Points Against Curious onlookers. In *ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT)*. 2017. Acceptance rate: 18%.
- [c4] T. D. Nguyen, **M. Chiesa**, M. Canini. Decentralized Fast Consistent Updates. In *ACM Symposium on SDN Research (SOSR)*, 2017. Acceptance rate: 23%.
- [c5] **M. Chiesa**, R. di Lallo, G. Lospoto, H. Mostafei, M. Rimondini, G. Di Battista. PrIXP: Preserving the Privacy of Routing Policies at Internet eXchange Points. In *IFIP/IEEE International Symposium on Integrated Network Management (IM)*, 2017.
- [c6] **M. Chiesa**, G. Retvari, M. Schapira. Lying Your Way to Better Traffic Engineering. In *ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT)*, 2016. Acceptance rate: 18%.
- [c7] **M. Chiesa**, I. Nikolaevskiy, S. Mitrovic, A. Gurtov, A. Mądry, A. Panda, M. Schapira, S. Shenker. The Quest for Resilient Static Forwarding Tables. In *IEEE International Conference on Computer Communications (INFOCOM)*, 2016. Acceptance rate: 18%.
- [c8] **M. Chiesa**, I. Nikolaevskiy, S. Mitrovic, A. Gurtov, A. Mądry, M. Schapira, S. Shenker. On the Resiliency of Randomized Routing Against Multiple Edge Failures. In *International Colloquium on Automata, Languages, and Programming (ICALP)*, 2016. Acceptance rate: 28%.
- [c9] **M. Chiesa**, G. Kindler, M. Schapira. Traffic Engineering with Equal-Cost-Multipath: an Algorithmic Perspective. In *IEEE International Conference on Computer Communications (INFOCOM)*, 2014. Acceptance rate: 19%.
- [c10] **M. Chiesa**, L. Cittadini, Laurent Vanbever, S. Vissicchio, G. Di Battista. Using Routers to Build Logic Circuits: How Powerful is BGP?. In *IEEE International Conference on Network Protocols (ICNP)*, 2013. Acceptance rate: 18%. **Best Paper Award. Applied Network Research Prize external nomination.**
- [c11] **M. Chiesa**, G. Lospoto, M. Rimondini, G. Di Battista. Intra-Domain Pathlet Routing. In *IEEE International Conference on Computer Communications and Networks (ICCCN)*, 2013. Acceptance rate: 30%.
- [c12] **M. Chiesa**, G. Di Battista, T. Erlebach, M. Patrignani. Computational Complexity of Traffic Hijacking under BGP and S-BGP. In *International Colloquium on Automata, Languages, and Programming (ICALP)*, 2012. Acceptance rate: 28%.

- [c13] **M. Chiesa**, L. Cittadini, G. Di Battista, S. Vissicchio. Local Transit Policies and the Complexity of BGP Stability Testing. In *IEEE International Conference on Computer Communications (INFOCOM)*, 2011. Acceptance rate: 15%.
- [c14] A. Dainotti, C. Squarcella, E. Aben, K. C. Claffy, **M. Chiesa**, M. Russo, A. Pescapé. Analysis of Country-wide Internet Outages Caused by Censorship. In *ACM Internet Measurement Conference (IMC)*, 2011. Acceptance rate: 19%. **Applied Network Research Prize**.
- [c15] P. Angelini, T. Bruckdorfer, **M. Chiesa**, F. Frati, M. Kaufmann, C. Squarcella. On the Area Requirements of Euclidean Minimum Spanning Trees. In *Algorithms and Data Structures Symposium (WADS)*, 2011.

#### International journal publications.....

- [j16] **M. Chiesa**, G. Retvari, M. Schapira. Oblivious Routing in IP Networks. In *Transactions on Networking (ToN)*. 2018.
- [j17] G. Antichi, I. Castro, **M. Chiesa**, E. Fernandes, R. Lapeyrade, D. Kopp, J. Han, M. Bruyere, C. Dietzel, M. Gusat, A. W. Moore, P. Owezarski, S. Uhlig, M. Canini ENDEAVOUR: A Scalable SDN Architecture for Real-World IXPs. In *IEEE JSAC Special issue on Emerging Technologies in Software-driven Communication (JSAC)*, 2017.
- [j18] **M. Chiesa**, I. Nikolaevskiy, S. Mitrovic, A. Gurtov, A. Mądry, M. Schapira, S. Shenker. On the Resiliency of Static Forwarding Tables. In *IEEE/ACM Transactions on Networking (ToN)*, 2017.
- [j19] **M. Chiesa**, G. Kindler, M. Schapira. Traffic engineering with Equal-Cost-Multipath: An algorithmic perspective. In *IEEE/ACM Transactions on Networking (ToN)*, 2017.
- [j20] **M. Chiesa**, C. Dietzel, G. Antichi, M. Bruyere, I. Castro, M. Gusat, T. King, A. W. Moore, T. D. Nguyen, P. Owezarski, S. Uhlig, M. Canini. Inter-domain Networking Innovation on Steroids: Empowering IXPs with SDN Capabilities. In *IEEE Communications Magazine special issue on SDN Use Cases for Service Provider Networks (Comm. Mag.)*, October, 2016.
- [j21] **M. Chiesa**, G. Di Battista, T. Erlebach, M. Patrignani. Computational Complexity of Traffic Hijacking under BGP and S-BGP. In *Theoretical Computer Science (TCS)*, 600:143-154. 2015.
- [j22] A. Dainotti, C. Squarcella, E. Aben, K. C. Claffy, **M. Chiesa**, M. Russo, A. Pescapé. Analysis of Country-wide Internet Outages Caused by Censorship. In *IEEE/ACM Transactions on Networking (ToN)*, 22(6):1964-1977. 2014.
- [j23] **M. Chiesa**, G. Lospoto, M. Rimondini, G. Di Battista. Intra-Domain Routing with Pathlets. In *Computer Communications (COMCOM)*, 46:76-86. 2014.
- [j24] P. Angelini, T. Bruckdorfer, **M. Chiesa**, F. Frati, M. Kaufmann, C. Squarcella. On the Area Requirements of Euclidean Minimum Spanning Trees. In *Computational Geometry: Theory and Applications (CG)*, 47(2):200-213. 2014. Special Issue on Selected Papers from WADS '11.

#### Workshop papers, extended abstracts, demo, and posters.....

- [w25] A. Dethise, **M. Chiesa**, M. Canini. Poster: Prelude: Ensuring Inter-Domain Loop-Freedom in SDN-Enabled Networks. In the *Asia-Pacific Workshop on Networking (APNet)*, 2018.
- [w26] P. Marcos, **M. Chiesa**, L. Muller, P. Kathiravelu, C. Dietzel, M. Canini, M. Barcellos.. Poster: Dynam-IX: a Dynamic Interconnection eXchange. In *Applied Networking Research Workshop (ANRW)*, 2018.
- [w27] Y. Alowayed, M. Canini, P. Marcos, **M. Chiesa**, M. Barcello. Poster: Picking a Partner: A Fair Blockchain Based Scoring Protocol for Autonomous Systems. In *Applied Networking Research Workshop (ANRW)*, 2018.

- [w28] R. Sedar, M. Borokhovich, **M. Chiesa**, G. Antichi, S. Schmid. Exploring Fast Reroute Mechanisms in P4. In *SIGCOMM Workshop on Networking for Emerging Applications and Technologies (NEAT)*. 2018. Workshop paper.
- [w29] K-T. Foerster, M. Parham, **M. Chiesa**, S. Schmid. TI-MFA: Keep Calm and Reroute Segments Fast In *IEEE Global Internet Symposium (GI)*, 2018
- [w30] A. Dethise, **M. Chiesa**, M. Canini. Poster: Privacy-Preserving Detection of Inter-Domain SDN Rules Overlaps. In (**SIGCOMM**), 2017
- [w31] C. Dietzel, G. Antichi, I. Castro, E. Fernandes, **M. Chiesa**, D. Kopp. Demo: SDN-enabled Traffic Engineering and Advanced Blackholing at IXPs. In *Symposium on SDN Research (SOSR)*, 2017
- [w32] T. D. Nguyen, **M. Chiesa**, M. Canini. Towards Decentralized Fast Consistent Updates. In *Applied Networking Research Workshop (ANRW)*, 2016. Workshop paper.
- [w33] **M. Chiesa**, D. Demmler, M. Canini, M. Schapira, T. Schneider. Poster: Towards Securing Internet eXchange Points Against Curious onlookers. In *Applied Networking Research Workshop (ANRW)*, 2016.
- [Under submission](#).....
- [u1] One journal paper submission.

## Selected Awards

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- **Best Paper**
  - *ICNP 2013*
- **IETF Applied Research Networking Prize 2012**
  - *"Analysis of Country-wide Internet Outages Caused by Censorship"*
- **IETF Applied Research Networking Prize 2013 external nomination**
  - *"Using Routers to Build Logic Circuits: How Powerful is BGP?"*
- **Travel Grants**
  - *INFOCOM 2011, ICNP 2013*
- **National Mathematics Competitions 2005**
  - *4th placement at the Italian Kangourou mathematics competition (Mirabilandia, Italy)*
  - *Honorable mention at the Italian championship in mathematics (Cesenatico, Italy)*
  - *7th place at the regional mathematics competition within the area of Rome (Italy). Over 100,000 students.*

## Professional Service

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- **Co-chair**
  - *ACM SIGCOMM Student Research Competition 2018*
- **Program Committee**
  - *APNet 2019, INFOCOM 2019, CCGrid 2019 ICNP 2018, INFOCOM 2018, SOSR 2018, HPSR 2018, CCGrid 2018, LANMAN 2018, APNeT 2018, EuroSys Doctoral Workshop 2018, SOSR Posters and Demos 2018, ICNP 2017, ITC 2017, SWFAN 2017 (Infocom workshop)*
- **Session chair invitations**
  - *ICNP 2018*
  - *SOSR 2018*
  - *INFOCOM 2018*
  - *LANMAN 2018*
  - *CoNEXT 2017: Network Management and SDN*
  - *ICNP 2017*

- **Ph.D. Thesis Committee**
  - *Németh Krisztián, Budapest University of Technology and Economics, Hungary, Spring 2018*
  - *Rodrigo Ruas Oliveira, Universidade Federal Do Rio Grande do Sul, Brazil, Spring 2018*
- **Topic Preview Invitation**
  - *“Routing” session at SIGCOMM 2018*
- **Journal panel**
  - *JSAC on SDN scalability, 2018*
- **Invited papers**
  - *LANMAN 2018 (declined)*
- **External Reviewer**
  - *CoNEXT 2018*
  - *Computer Networks 2018*
  - *Transactions on Networking (ToN) 2016–current*
  - *Transactions on Mobile Computing (TMC) 2017–current*
  - *Transactions on Network and Service Management (TNSM) 2016–current*
  - *Parallel Processing Letters 2017–2018*
  - *INFOCOM 2016–2017*
  - *ACM Computer Communication Review 2017*
  - *SOSR 2017*
  - *COMCOM 2017*
  - *IFIP Networking 2017*
  - *ICALP 2016*
  - *Symposium on Experimental Algorithms (SEA) 2013*
  - *Graph Drawing 2012*
- **Affiliations**
  - *ACM (Association for Computing Machinery) 2015–2018*
  - *IEEE (Institute of Electrical and Electronics Engineers) 2011–2018*

## Selected Talks

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- **NEAT workshop, colocated with SIGCOMM 2018** **Budapest, Hungary**
  - *Supporting Emerging Applications With Low-Latency Failover in P4* *Aug 2018*
- **SIGCOMM 2018** **Budapest, Hungary**
  - *Preview session on “Routing”* *Aug 2018*
- **P4 Workshop** **Stanford, CA, US**
  - *P4 Fast Reroute: Keep Calm and Enjoy Programmability* *Jun 2018*
- **RIPE Meeting** **Marseille, France**
  - *Dynam-IX: a Dynamic Interconnection eXchange* *May 2018*
- **CoNEXT** **Seoul, South Korea**
  - *SIXPACK: Securing Internet eXchange Points Against Curious onlookers* *Dec 2017*
- **Aalborg University** **Aalborg, Denmark**
  - *Bootstrapping Internet Routing Innovation* *Nov 2017*
- **University of Warwick** **Coventry, UK**
  - *Routing the Future: Bootstrapping Internet Innovation* *Jul 2017*

- **KTH Royal Institute of Technology** **Stockholm, Sweden**  
*Routing the Future: Bootstrapping Internet Innovation* *Jun 2017*
- **University of Cambridge** **Cambridge, England, UK**  
*Routing the Future: Bootstrapping Internet Innovation* *May 2017*
- **University of Edinburgh** **Edinburgh, Scotland, UK**  
*Routing the Future: Bootstrapping Internet Innovation* *Apr 2017*
- **King Abdullah University of Science and Technology** **Thuwal, Saudi Arabia**  
*Securing Interdomain Routing Against Curious onlookers* *Jan 2017*
- **Université catholique de Louvain** **Louvain-la-neuve, Belgium**  
*Routing the Future: Bootstrapping Internet Innovation* *Jan 2017*
- **CoNEXT** **Irvine, CA, US**  
*Lying Your Way to Better Traffic Engineering* *Dec 2016*
- **Fraunhofer SIT Institute** **Darmstadt, Germany**  
*Securing Internet Routing: an SDN Approach* *Nov 2016*
- **Amsterdam Internet eXchange Point (AMS-IX)** **Amsterdam, Netherlands**  
*Securing Interdomain Routing Against Curious onlookers* *Oct 2016*
- **Applied Networking Research Workshop (ANRW)** **Berlin, Germany**  
*Towards Decentralized Fast Consistent Updates* *Jul 2016*
- **Applied Networking Research Workshop (ANRW)** **Berlin, Germany**  
*Towards Securing Interdomain Routing Against Curious onlookers* *Jul 2016*
- **INFOCOM** **San Francisco, CA, US**  
*The Quest for Resilient Static Forwarding Tables* *Apr 2016*
- **Deutscher Commercial Internet Exchange (DE-CIX)** **Frankfurt, Germany**  
*Securing Interdomain Routing Against Curious onlookers* *Mar 2016*
- **Summer Networking at the Hebrew University of Jerusalem** **Jerusalem, Israel**  
*Towards Optimized and Reliable Interdomain Routing* *Jul 2015*
- **Budapest University of Technology and Economics** **Budapest, Hungary**  
*Towards Optimized and Reliable Interdomain Routing* *Jun 2015*
- **Université catholique de Louvain** **Louvain-la-neuve, Belgium**  
*Towards Optimized and Reliable Interdomain Routing* *May 2015*
- **Roma Tre University** **Rome, Italy**  
*The Role of Routing Policies in the Internet: Stability, Security, and Load-Balancing* *Jun 2014*
- **INFOCOM** **Toronto, Canada**  
*Traffic Engineering with Equal-Cost-Multipath: an Algorithmic Perspective* *Apr 2014*
- **I-CORE Algo Day** **Tel Aviv, Israel**  
*Traffic Engineering with Equal-Cost-Multipath: an Algorithmic Perspective* *Apr 2014*
- **ICNP** **Göttingen, Germany**  
*Using Routers to Build Logic Circuits: How Powerful is BGP?* *Oct 2013*
- **ICALP** **Warwick, UK**  
*Computational Complexity of Traffic Hijacking under BGP and S-BGP* *Jul 2012*
- **University of Leicester** **Leicester, UK**  
*Computational Complexity of Traffic Hijacking under BGP and S-BGP* *Jul 2012*

- **INFOCOM** **Shanghai, China**  
*Local Transit Policies and the Complexity of BGP Stability Testing* *Apr 2011*
- **AlgoDEEP** **Rome, Italy**  
*Local Transit Policies and the Complexity of BGP Stability Testing* *Apr 2011*

## Teaching and Supervision Experience

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- **Planned: Course responsible** **KTH Royal Institute of Technology**  
*IK 2217: Advanced Internetworking II* *Period III, 2019*
- **Teacher** **KTH Royal Institute of Technology**  
*IK 2215: Advanced Internetworking I* *Period I, 2018*
- **Doctoral Student supervision** **KTH Royal Institute of Technology**  
*Supervisor for one doctoral student* *June, 2018 — current*
- **Internship Student supervision** **KTH Royal Institute of Technology**  
*Supervisor for one internship student* *Summer, 2018*
- **Teacher** **KTH Royal Institute of Technology**  
*IK 2220: Software Defined Networking* *Period IV, 2018*
- **Master Student supervision** **KTH Royal Institute of Technology**  
*Supervisor for one master student* *Period IV, 2018*
- **Teacher** **KTH Royal Institute of Technology**  
*IK 2217: Advanced Internetworking II* *Period III, 2018*
- **Master thesis reader** **Université catholique de Louvain**  
*Reader for one master thesis* *Spring 2017*
- **Teaching Assistant** **Université catholique de Louvain**  
*INGI 2142 Computer networks: configuration and management* *Spring 2017*
- **Student supervision** **Université catholique de Louvain**  
*Informal advisor to two Ph.D. students* *Spring 2017*
- **Student supervision** **Roma Tre University**  
*Informal advisor to two master students* *Spring 2017*
- **Student supervision** **Université catholique de Louvain**  
*Informal advisor to one master student* *Spring 2017*
- **Guest lecture** **Université catholique de Louvain**  
*INGI2347 Computer System Security* *Spring 2016*
- **INGI2349 Network and Communication Seminar** **Université catholique de Louvain**  
*Graded students oral presentations* *Autumn 2015*
- **Advanced seminars on Oblivious Routing** **Hebrew University of Jerusalem**  
*Designed and taught a seminar course for postgraduate students* *Spring 2015*
- **Students supervision** **Roma Tre University**  
*Informally advised two bachelor and one master students* *2012–2013*  
*Published one conference [c11] and one journal [j23] paper*
- **Thesis reviewer** **Roma Tre University**  
*Read, reviewed, and graded 11 external B.sc./M.sc. thesis* *2011–2013*

## Research Visits $\geq$ 10 days

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- **King Abdullah University of Science and Technology** **Thuwal, Saudi Arabia**  
*Invited visitor, Department of Computer Science*  
 Host: Prof. Marco Canini  
 Keywords: Internet architecture and security  
*Jan-Feb 2017*
- **Hebrew University of Jerusalem** **Jerusalem, Israel**  
*Invited visitor, Department of Computer Science*  
 Host: Prof. Michael Schapira  
 Keywords: oblivious routing  
*Mar 2016*
- **Budapest University of Technology and Economics** **Budapest, Hungary**  
*Invited visitor, Department of Computer Science*  
 Host: Dr. Gábor Rétvári  
 Keywords: oblivious routing  
*May 2015–Jun 2015*
- **UC Berkeley** **Berkeley, CA, US**  
*Invited visitor, Department of Computer Science*  
 Host: Prof. Scott Shenker  
 Keywords: data-plane connectivity  
*Aug 2014*
- **International Computer Science Institute and UC Berkeley** **Berkeley, CA, US**  
*Visiting Research Fellow, Department of Computer Science*  
 Host: Prof. Scott Shenker  
 Keywords: deflection switching, network utilization  
*Aug 2012–Dec 2013*
- **Hebrew University of Jerusalem** **Jerusalem, Israel**  
*Visiting Research Fellow, Department of computer Science*  
 Host: Prof. Michael Schapira  
 Keywords: traffic-engineering, ECMP  
*Oct 2012–Apr 2013*
- **University of Leicester** **Leicester, UK**  
*Visiting Student, Department of Computer Science*  
 Host: Prof. Thomas Erlebach  
 Keywords: routing, bgp, migrations, algorithms  
*July 2012*
- **Université catholique de Louvain** **Louvain-la-neuve, Belgium**  
*Visiting Student, IP Networking Lab, Department of Computer Science*  
 Host: Prof. Olivier Bonaventure, Dr. Stefano Vissicchio, and Dr. Laurent Vanbever  
 Keywords: routing, bgp, migrations, point-of-presence design  
*May 2012*

## Languages

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**Italian:** Mothertongue

**English:** Proficient

*fluent (writing, speaking, reading)*

**Polish:** Independent

*intermediate (writing, speaking, reading)*

**French:** Beginner/Independent

*basic (writing, speaking); intermediate (reading); level A1 certification*

**Swedish:** Beginner

*basic (writing, speaking, reading); completed level A1; Duolingo course completed*

**Hebrew:** Beginner

*basic (writing, speaking, reading); last used in 2015*