ANTON RESHETNIKOV

Potsdamer Chaussee 19a
14163 Berlin, Germany

+49 163 365 32 35

anton@reshetnikov.com
http://reshetnikov.com

PROFESSIONAL SUMMARY

Over 6 years of experience, including building and managing team of 4-7, developing of software for seismic data processing and interpretation, doing research on new methods of reservoir characterization using microseismic data. Technical expertise in the development of solutions for an inverse problems and a high-performance computing.

EXPERIENCE

Department of Geophysics, Free University, Berlin, Germany

Research assistant, PhD student, from 09/2007
Developing a new method of use waveforms from an induced microseismic events to get a high resolution image of a stimulated reservoir. Additionally taking part in several research projects aimed at better understanding of the nature of fluid induced microseismicity.

Geovers, Ltd., Moscow, Saint–Petersburg, Russia

Team leader, 02/2005 – 09/2007
Responsible for company's branch management as well as developing and delivering solutions for high-performance computing

- Branch organization in Saint-Petersburg
- Completed projects: 2D inverse kinematic problem, 2D and 3D pre-stack depth migration, 3D ray-tracing based travel time computation
- Working with a large industrial customer (CNPC, China)

Software engineer, 02/2001 – 02/2005
Responsible for designing, coding and debugging applications

- Developing the software for interactive solution of inverse kinematic and dynamic geophysics problems for complex 2D models
- Developing an algorithms for multidimensional optimization computational methods
- Computational modeling of acoustic wave propagation processes for 2D models

EDUCATION

2008 – 2012	PhD student, Free University of Berlin, Department of Geophysics
2003 – 2006	Master's degree in Physics, Saint–Petersburg State University, Faculty of Physics, Department of Computational Physics
1999 – 2003	Bachelor's degree in Physics, Saint–Petersburg State University, Faculty of Physics

PERSONAL SKILLS AND COMPETENCES

Computational skills	Computational theory and practice, numerical methods for large-scale problems and parallelization paradigms
Technical skills	Programming languages: C++, C, Fortran, Pascal Parallel programming: MPI Web development: HTML, DHTML, CSS, JavaScript

PERSONAL CHARACTERISTICS

Able to run a business, loyal to company, ambitious, creative

PROJECT HIGHLIGHTS

Micoseismic reflection imaging of a hydraulic reservoir stimulation

09/2010 – 01/2011, PhD research project at FU Berlin in cooperation with Geothermal Explorers Ltd. and Tohoku University

Application of the microseismic reflection imaging approach to the data Basel 1 geothermal reservoir stimulation. There are two separate 3D images of the waveforms from the microseismic cloud recorded at two downhole stations was constructed. The first image represents the large scale fault system 1 km east from the injection well. The second one is the high resolution image of microseismic cloud interior near the open hole interval which is consistent with the event locations and the information about fractures from the borehole.

A. Reshetnikov, J. Kummerow, S. Shapiro, H. Asanuma and M. Häring (2011). Using microseismicity to image the structure of the Basel geothermal reservoir. Expanded abstracts, Accepted to EAGE 73 annual meeting and technical exhibition, Vienna

Microseismic imaging using a single geophone

06/2009 – 09/2010, PhD research project at FU Berlin

Application of the microseismic reflection imaging to the data obtained from the German Continental Deep Drilling program (KTB project). This is a continuous data stream containing induced microseismicity data recorded at a single 3C geophone located at approximately 3.5 km depth. Using P and S time picks we have located 414 microseismic events using data from the borehole geophone and from near-surface stations. Since microearthquakes occur not at the same time, it is possible to separate continuous data stream recorded at the receiver to the number of 3C traces containing waveforms from different events. Using these traces I produced seismic gather for the microseismicity cloud. Using the Fresnel-Volume-Migration approach the high resolution 3D image of the seismic data between P- and S- direct waves was constructed. There was a complex network of reflectors revealed within the microseismicity cloud which belong to large scale fault zone.

A. Reshetnikov, J. Kummerow, S. Buske, S. A. Shapiro (2010). Microseismic imaging from a single geophone: KTB. SEG Expanded Abstracts 29, 2070, Denver

Construction of 3D permeability model from fluid injection-induced microseismicity

03/2010, Research at FU Berlin in the frame of MeProRisk project

Using seismicity based reservoir characterization (SBRC) approach the hydraulic permeability for three fluid injection experiment stages at KTB was estimated, at depth 4 km, 5.4k m and 9 km which is consistent with first fault zone, background rocks and second fault zone respectively. Then assuming correlation between seismic reflectivity and permeability we have constructed the permeability model from the reflectivity cube obtained by the surface seismic imaging.

A. Reshetnikov, M Jaya, S. Buske, J. Kummerow and S. A. Shapiro (2011). Characterization of a geothermal reservoir using microseismic data. Geophysical Research Abstracts, Vol. 13, EGU2011-10308, Accepted to EGU General Assembly 2011, Vienna

Seismic imaging using natural microearthquakes as a seismic sources

09/2007 – 06/2009, PhD research project at FU Berlin

Development of a new passive seismic reflection imaging approach which consists of two steps. First, the hypocenter of the microseismic event is precisely located. Second, this event is treated as a "pseudo-active" seismic source and the reflections within the recorded wavefield are processed by using a directional migration algorithm in order to construct a high resolution image of the illuminated subsurface region. This approach was applied to a number of microseismic events recorded by a borehole array in the SAFOD (San-Andreas-Fault-Observatory-at-Depth) main hole. Results obtained were high-resolution 3D images of different SE-NW oriented reflectors related to the SAF system in the close vicinity of the borehole.

A. Reshetnikov, S. Buske, and S. A. Shapiro (2010), Seismic imaging using microseismic events: Results from the San Andreas Fault System at SAFOD, Journal of Geophysical Research, 115, B12324

Modelling of direct and single-reflected waves for 3D layered model

03/2007 – 08/2007, responsible for product architecture and development

Development of the program for ray-tracing based 3D modeling of the kinematical and dynamical characteristics of the direct and single reflected waves for VSP acquisition systems. The program was developed in the frame of the contract with BGP, China.

Inverse Kinematic Problem for VSP data

06/2004 – 05/2007, responsible for product architecture and development

Development of the method of 2D velocity model estimation using VSP travel times. The model is represented by a number of layers with smooth interfaces defined by cubic splines. Each layer is defined by the P and S velocities and its vertical gradients. The method consists of three steps: construction of the first order 1D model, construction of the model with the interfaces represented in form of the second or third order polynomial functions and construction of the model with spline boundaries and gradient velocities. The program was included into the commercial software package.

Dynamic decomposition of the wavefield and reconstruction of the media

06/2002 – 09/2005, responsible for the design and implementation of the computational part

Implementation of the interactive tool for velocity model correction, ray-tracing, and imaging of the reflected waves of different types, including multiples. The program is a part of VSP seismic processing and interpretation software UNIVERS.

A. Reshetnikov, V. Reshetnikov, I. Soltan, and A. Tabakov (2003). Dynamic decomposition of seismic wavefields and media model reconstruction with raytracing method by VSP data. International Conference and Exhibition “Geophysics of the XXI Century — Leap into the Future”, Moscow, Expanded Abstracts