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Kinematic and Rheological Model of Exhumation of High Pressure Granulites in the Variscan Orogenic Root: Example of the Blanský Les Granulite, Bohemian Massif, Czech Republic

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The structural pattern of the south Bohemian Moldanubian domain in the broad surroundings of Blanský les, Prachatice and Křišťanov granulite massifs is dominated by pervasive moderately NW dipping amphibolite facies foliation. This fabric parallels the trend of the Brunian and Saxothuringian margins and its attitude can be correlated to the flat lying amphibolite facies foliation dominating the eastern Moldanubian, ascribed by Schulmann et al. (2005) to a flow of Moldanubian rocks over the Brunia margin. In the vicinity of the granulite massifs this fabric is being disturbed to form irregular patterns passively adjusting a fold-like shape of rheologically stronger granulite massifs. Inside these rigid bodies, older Variscan fabrics have been well preserved, documenting two-stage exhumation history of the felsic granulites. Based on the kinematic model of granulite deformation history we use these fabrics to unravel the far-field stress changes in space and time during the Variscan collision.

The relict granulite facies fabrics allow for a reconstruction of the early exhumation mechanism in form of a vertical ascent channel because the subsequent cooling history froze these fab-

rics enabling us to observe them continuously on a km-scale. Analysis of the corresponding microstructure reveals very high plastic strain of quartz while the prevailing fine-grained feldspar dominated matrix shows only slight plastic deformation. Together with the presence of syndeformational intergranular partial melt this implies highly ductile behavior attaining characteristics of viscous flow. This offers an efficient way to transport the relatively small portions of lower crust rapidly upwards through the orogenic root.

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