Geometrische Gruppentheorie – Blatt 11, Aufgabe 4 - Lösung

$s_{n-i}(s_1 \dots s_{n-1})(s_1 \dots s_{n-2}) \dots (s_1 s_2) s_1 =$
$(s_1 \dots s_{n-i-2}\underline{s_{n-i} s_{n-i-1} s_{n-i}} s_{n-i+1} \dots s_{n-1})(s_1 \dots s_{n-2}) \dots (s_1 s_2) s_1 =$
$(s_1 \dots s_{n-i-2}\underline{s_{n-i-1} s_{n-i} s_{n-i-1}} s_{n-i+1} \dots s_{n-1})(s_1 \dots s_{n-2}) \dots (s_1 s_2) s_1 =$
$(s_1 \dots s_{n-1}) s_{n-i-1} (s_1 \dots s_{n-2}) \dots (s_1 s_2) s_1 =$
$(s_1 \dots s_{n-1})(s_1 \dots s_{n-2}) \dots (s_1 \dots s_{i+1}) s_1 (s_1 \dots s_i) \dots (s_1 s_2) s_1$

$(s_1 \dots s_{n-1}) \dots (s_1 s_2) s_1 s_i =$
$(s_1 \dots s_{n-1}) \dots \underline{\underline{(s_1 \dots s_i)(s_1 \dots s_{i-1}) s_i}} (s_1 \dots s_{i-2}) \dots (s_1 s_2) s_1$

$(s_1 \dots s_i)(s_1 \dots s_{i-1}) s_i =$
$(s_1 \dots s_{i-1})(s_1 \dots s_{i-2}\underline{s_i s_{i-1}) s_i} =$
$(s_1 \dots s_{i-1})(s_1 \dots s_{i-2}\underline{s_{i-1} s_i) s_{i-1}} =$
$(s_1 \dots s_{i-2})(s_1 \dots s_{i-3}\underline{s_{i-1} s_{i-2} s_{i-1}} s_i) s_{i-1} =$
$(s_1 \dots s_{i-2})(s_1 \dots s_{i-3}\underline{s_{i-2} s_{i-1} s_{i-2}} s_i) s_{i-1} =$
$(s_1 \dots s_{i-2})(s_1 \dots s_i) s_{i-2} s_{i-1} =$
$(s_1 \underline{s_2)(s_1 s_2} s_3 \dots s_i) s_2 \dots s_{i-1} =$
$(s_1 \underline{s_1)(s_2 s_1} s_3 \dots s_i) s_2 \dots s_{i-1} =$
$(s_1 s_1)(s_2 \dots s_i) s_1 s_2 \dots s_{i-1} =$
$\underline{\underline{s_1 (s_1 \dots s_i)(s_1 \dots s_{i-1})}}$

Damit folgt $\Omega^2 s_i = \Omega s_{n-i} \Omega = s_i \Omega^2 \Rightarrow \Omega^2$ liegt im Zentrum von B_n