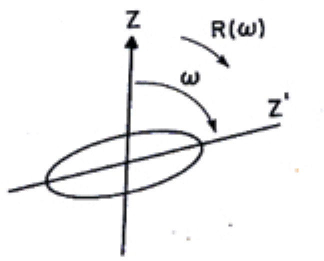
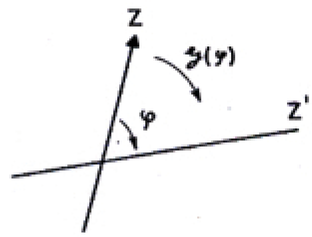
TABLE E.1

Analogy Between the Formalisms for Spatial Quadrupole Deformations and Pairing Distortions

Quadrupole		Pairing
	Two-body Hamiltonian	
$H_Q = -\frac{\chi}{2}\sum_\mu Q_\mu Q_\mu^+$		$H_p = -GT(2)\,T(-2)$
$Q_\mu = \sum_{\nu,\nu'}\langle\nu\,\vert\, r^2Y_{2\mu}\,\vert\,\nu'\rangle c_{\nu'}^+ c_\nu$		$T(2) = \sum_{\nu>0} c_\nu^+ c_{\bar\nu}^+ = T^+(-2)$
	Associated average field	
$V_Q = -\sum_\mu \mathrm{K}_\mu Q_\mu \quad (\mu = 0, \pm 1, \pm 2)$		$V_p = -\sum_\alpha \Delta_\alpha T(\alpha) \quad (\alpha = \pm 2)$
	(potential deformation parameters)	
K_μ		Δ_α
	The specific operator is the	
electromagnetic multipole operator		two-body transfer operator
	(macroscopic description)	
$\mathscr{M}(E2, \mu) = \frac{5}{4\pi} Z e R_0^2 \mathrm{K}_\mu$		$T(\Delta) = \sum_{\nu>0} U_\nu(\Delta)V_\nu(\Delta)$
	(microscopic description)	
$\mathscr{M}(E2, \mu) = \sum_{\nu,\omega}\langle\nu\,\vert\, r^2Y_{2\mu}\,\vert\,\omega\rangle c_\omega^+ c_\nu$		$T(2) = \sum_{\nu>0} c_\nu^+ c_{\bar\nu}^+$
	It probes the	
particle–hole		particle–particle
	correlations aspects of the residual interaction.	
	The single-particle potential V is not invariant under	
rotations in three dimensions $R(\mathbf{n}, \theta) = \exp\{-i\,\mathbf{I}\cdot\mathbf{n}\theta\}$ total angular momentum operator: $\mathbf{I}$ $R(\mathbf{n}, \theta)Q_\mu R^{-1}(\mathbf{n}, \theta) = \sum_{\mu'} D^2_{\mu'\mu}(\omega)Q_{\mu'}$ ω = Euler angles Q = tensor operator of rank two		gauge transformations $\mathscr{G}(\varphi) = \exp\{-i\,\mathscr{N}\varphi\}$ number operator: $\mathscr{N} = \sum_{\nu>0}(c_\nu^+c_\nu + c_{\bar\nu}^+c_{\bar\nu})$ $\mathscr{G}(\varphi)T(\alpha)\mathscr{G}^{-1}(\varphi) = e^{-i\alpha\varphi}T(\alpha)$ φ = gauge angle T = operator with transfer quantum number α
	The violation of	
spherical symmetry		particle number
	defines an intrinsic system of reference in	
the physical three-dimensional space		an abstract space
		
	Instead of parametrizing the deformation of the potential by	
K_μ		Δ_α
	one can use	
β and γ and the angle ω		the BCS gap parameter Δ and the angle φ
	that defines the orientation of the intrinsic frame of reference.	